

**EXPLORING ADOLESCENTS' EXPERIENCES AND PARENTS' TEACHING
STRATEGIES RELATED TO FOOD PREPARATION LITERACY: A
PHOTOVOICE AND GROUNDED THEORY APPROACH**

A Dissertation

by

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Submitted to the Office of Graduate and Professional Studies of
Texas A&M University
in partial fulfillment of the requirements for the degree of

DOCTOR OF PHILOSOPHY

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December 2015

Major Subject: Health Education

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ABSTRACT

The purpose of this dissertation was to explore and provide evidence-based insight on food preparation literacy in adolescents' homes. First, a comprehensive systematic review was conducted to understand (1) synthesize the literature on food preparation literacy among adolescents, and (2) assess the methodological quality of these studies. The review comprised 38 articles and addressed how researchers conceptualize food preparation literacy, their rationale for including some aspects of food preparation literacy, and reasons for the methodology utilized.

Second, photovoice and Grounded Theory were combined to assess food preparation practices in the homes of four rural families with an adolescent household member. The analysis shows adolescents were encouraged to participate in food preparation at home. The adolescents described their cooking experiences as challenging at first, but becoming easier overtime with practice.

The adolescents believed food preparation at home reduced stress and promoted bonding time with parents, but increased tiredness. On the other hand, the parents of adolescents reported their food preparation literacy and teaching strategies emerged from observation, motivation, and direct instruction. Time, age, emotion, and family (grandparents) helped to determine when teaching and learning occurred. Other factors that impacted learning and teaching were resources (T.V., computers), location (home, school), and feedback.

Overall, the two studies identified three key findings: (1) not enough work is being done in the area of food preparation; (2) many factors influence how food preparation literacy is transmitted; and (3) food preparation knowledge and skills are transmitted primarily through informal means. This study provides an initial theoretical model to understand the dynamics of food preparation training among adolescents. Further research is needed to test the model qualitatively and better understand the definition in the use of food preparation literacy. Health policy advocates or policymakers, health educators, and dietitians may consider developing and testing educational and behavioral interventions related to food preparation literacy for adolescents and their parents.

DEDICATION

This dissertation is dedicated to all single mothers and their children. It represents commitment, dedication, love, tears, and bonding. Mothers, never give up or settle for less than you deserve. Always follow your dreams and trust God. Never let anyone discourage you from your goals. You can do it; for I did it! Let your single mother status remind you of your strength.

Children, believe in your mothers. You are their world, gem, and biggest inspiration. There will be times when you feel neglected and parentless; but remember, mommy always has you in her heart. At the end of it all, you are the ones for whom we work so hard.

ACKNOWLEDGEMENTS

A car with a steering wheel cannot move in any direction unless there is a driver. First, thanks to my almighty God for blessing me with wisdom, understanding, protection, and guiding mercies while I studied at Texas A&M University. Second, many thanks to Kamal, Olivia, and Caleb who made certain I was always nourished while writing. Olivia and Kamal, you were my rock when the storm was high. I will not forget our weekly meetings and Olivia's daily text: "Mommy just stay focused and remember there is a light at the end of the tunnel. I love you."

I want to express my deepest appreciation to my committee chair Dr. E. Lisako J. McKyer. This work would not be possible without your kind words of encouragement, weekly advising, and guidance. I am very grateful for your support and belief in my work. I would like to thank my committee members Drs. Corliss Outley, Laura Stough, Kelly Wilson, and Alex McIntosh. Dr. Stough and Dr. Outley I deeply value your insights you brought to qualitative methodology. I will definitely water and cherish the seeds you have planted in me. Dr. Wilson and Dr. McIntosh, your endless support and expertise will always be remembered. I would like to specially thank Margaret Foster for her time and guidance with my systematic literature review.

A special note of thanks to my instructors, professors, friends, and family who have touched my life while I was on this journey. My sincerest gratitude to my mentor, Dr. Sharon McWhinney, for providing the research foundation that was so crucial in

propelling me along this journey. To Dr. Isabella Granderson, our late night writing marathons will always be remembered. Thanks for your support.

To my mother Mary McDonald, I appreciate your endless love, support, and kind words. I will never forget our late night conversations and your encouraging words, especially “Angie you cannot go in like a Johnny cake and come out like a dumpling.” To my dad Osmond McDonald, you are the world’s greatest. You have taught me how to oppose life’s obstacles with a smile. Now I understand what it means to “fight because I am a gamecock.”

I am grateful to my sisters, Kerry Ann, Kerisha, and Yvonne; my nephews Travayne, Tevaughn, Kenjay; and my niece Otavia. I know you all were mad at me when I could not answer your calls or spend quality time with you. Now that this dissertation is over, we can make up for all the missed time. Thank you all for your support and love.

I would also like to express my gratitude to Lenna Dawkins-Moultin, Dr. Simone Gardiner, Sheryl Smith, and Oliver Johnson. You taught me how to be a friend and showed me what it means to keep a sister from falling. You mean the world to me.

I would like to express my profound thanks to my other family members and friends who supported me in any form or shape and helped me to maintain my sanity: Melisa Stewart, Divya Talwar, Jacqueline Kidd-Gordon, Tavoy Hall, Conroy Stewart, Iris Campbell, Marjorie Kidd, Desrine Kidd, and Amelia Kidd. Thank you.

Finally, I would like acknowledge the families in Waller County who volunteered to participate in this study. Also, many thanks to Kimberly Rose for her help with recruiting volunteers.

NOMENCLATURE

Diet-related Diseases:	Any condition related to diet that causes sickness in humans. The condition may be caused by poor or excessive nutrition (obesity, diabetes).
Food Preparation Literacy (FPL):	is an individual's ability to plan, manage, and prepare tasty food items or dishes with limited directions (Vidgen & Gallegos, 2014).
Food Preparation	The process of selecting, measuring and combining ingredients or food for eating.
Home Cooked:	The process of cooking any food for consumption at home.
Home Prepared:	The process of cooking or assembling meal at home.
IOM:	Institute of Medicine
Meal Management:	The ability to prioritize time for food preparation regardless of life circumstance.
Meal Preparation:	The ability to apply food safety procedure to develop sound nutritious meals from available food sources.
NIH:	The National Institutes of Health
Plan:	The ability to make wise decision about selecting foods to create a balanced meal.

TABLE OF CONTENTS

	Page
ABSTRACT	ii
DEDICATION	iv
ACKNOWLEDGEMENTS	v
NOMENCLATURE.....	viii
TABLE OF CONTENTS	ix
LIST OF FIGURES.....	xi
LIST OF TABLES	xii
CHAPTER I INTRODUCTION LITERATURE REVIEW	1
What is food preparation literacy?	1
Benefits and consequences of food preparation literacy	2
Efforts to reduce chronic disease and sustain good health.....	4
Dietary practices.....	5
CHAPTER II FOOD PREPARATION LITERACY AMONG ADOLESCENTS: AN ASSESSMENT OF EMPIRICAL LITERATURE AND METHODOLOGICAL QUALITY	9
Introduction	9
Methods	13
Results	18
Discussions.....	38
Conclusions	44
CHAPTER III PHOTOVOICE GROUNDED THEORY: ADOLESCENTS FAMILY HOME FOOD PREPARATION EXPERIENCES AND PERCEPTIONS RATES	45
Introduction	45
Methods	49
Results	60

Discussions.....	81
Conclusions	86
CHAPTER IV SUMMARY AND CONCLUSIONS.....	87
Contribution to literature	89
Recommendations for future research.....	90
REFERENCES	93
APPENDIX A	117
APPENDIX B	119
APPENDIX C	120
APPENDIX D	121
APPENDIX E	122
APPENDIX F	123
APPENDIX G	124

LIST OF FIGURES

	Page
Figure 1 Systematic Literature Search for Articles Published Between 2006 and 2015 Related to Food Preparation Literacy	19
Figure 2 Selected Pictures Used in the Data Analysis.....	78
Figure 3 Food Preparation Literacy Model	80

LIST OF TABLES

	Page
Table 1 Criteria for Assessing Food Preparation Literacy Components in the Literature	16
Table 2 Characteristics of the Food Preparation Literacy Studies	25
Table 3 Critical Assessment of the Qualitative Studies	36
Table 4 Critical Assessment of the Quantitative Studies	37
Table 5 Second Meeting Schedule for Parents and Adolescents Interview	53
Table 6 Semi-structured Interview Guide	55
Table 7 Open and Axial Coding Categories with Properties and Dimensions	58

CHAPTER I

INTRODUCTION AND LITERATURE REVIEW

In general, literacy plays an important role in an individual's capability to obtain, process, and understand information needed to make appropriate decision about a particular phenomenon, behavior, task, or new topic (Berkman, Davis, & McCormack, 2010; Williams et al., 1995). According to the United States Department of Education and the National Institute of Literacy about 32 million adults in America cannot read. Twenty-two percent of the general population read below the 5th grade level, and 19% of high school graduates cannot read (Kutner, Greenburg, Jin, & Paulsen, 2006). These statistics represent adults from all races and ethnicities above 16 years-old. Blacks, Hispanics, American Indian/Alaskan Natives, and other multiracial adults are ranked lower in literacy when compared to Asian/Pacific Islanders (Kutner et al., 2006). Consequently, an overwhelming amount of literature has documented that low literacy affects a family's decision to eat healthy foods, understand health information, and practice a balanced lifestyle (Cha et al., 2014; Faruqi et al., 2015; Logan et al., 2015).

WHAT IS FOOD PREPARATION LITERACY?

Food preparation literacy is a newly defined term that explains an individual's capability to plan, manage, prepare, and eat food (Vidgen & Gallegos, 2014). The term emerges to assist consumers' understanding of the everyday practicality of meeting the set dietary guidelines. It describes the complexity of skills, knowledge, and

behavior that hinders daily food intake (Vidgen & Gallegos, 2014). Food preparation literacy encompasses meal preparation, food preparation (e.g., cooking, assembling foods), and meal planning (e.g., grocery shopping). The distinction between meal preparation and food preparation is very vague, and sometimes not easily recognizable. In the research literature, meal preparation is characterized as people's interaction with food and their ability to select and assemble foods into a complete meal, as demonstrated by My-plate (Brown, 2014; Larson, Perry, Story, & Neumark-Sztainer, 2006).

According to the World Health Organization (WHO) (2001), there are two types of meal preparation: simple meal preparation and complex meal preparation. In the simple meal preparation, foods are organized and served in small amounts such as snacks prepared from either raw or ready prepared food. Complex meal preparation is planned, organized, cooked and served in large quantities. It includes utilizing ingredients, transforming raw foods into edible products and using a wide range of food preparation techniques (e.g., peeling, mixing, boiling and stirring). Food preparation on the other hand, shares these same principles but focuses on the process of putting basic ingredients together to make one food for a meal (Brown, 2014).

BENEFITS AND CONSEQUENCES OF FOOD PREPARATION LITERACY

Food preparation literacy is essential to sustain the quality of life, reduce chronic diseases, promote preventive healthcare services, and decrease healthcare burdens on society. Food preparation literacy can limit an individual's ability to make informed decisions about healthy eating. To a greater extent, limited or no food preparation

literacy can impact the human body negatively. Promoting healthy eating and nutrition education are primary objectives to healthy outcomes and reduction of chronic diet-related diseases (Lloyd-Jones et al., 2010).

A major diet-related disease affecting the United States is obesity. According to the WHO, more than 42 million children under the age of five are either overweight or obese (De Onis, Blössner, & Borghi, 2010). The obesity prevalence is disproportionately higher among girls and boys (age 10-17) when compared to adult females and males (Cutler et al., 2008; Flegal, Carroll, Ogden, & Curtin, 2010). This trend is projected to increase by the year 2030. Evidence-based literature has indicated that childhood obesity is higher in low socioeconomic status populations, some minority groups, and certain environments such as rural underserved communities (Adekeye, Kimbrough, Obafemi, & Strack, 2014; Dietz, 2015; Popkin, Siega-Riz, & Haines, 1996). These inequalities are caused by various factors such as increased access to fast food, limited physical activity, and poor nutrition education. Subsequently, chronic diseases such as diabetes, heart disease, sleep apnea and strokes are increasing at a remarkable rate (Brown & Kuk, 2015; Farhat, Iannotti, & Caccavale, 2014). Heart disease and diabetes are among the top ten leading causes of death in the United States of America (Kochanek, Murphy, Xu, & Arias, 2014).

EFFORTS TO REDUCE CHRONIC DISEASES AND SUSTAIN GOOD HEALTH

Numerous efforts have been made to identify a solution to reduce and reverse diet-related diseases worldwide, but positive outcomes remain minimal across interventions (Adekeye et al., 2014; Chen et al., 2014). United States school policy makers have removed formal food preparation education (i.e., cooking skills) from the public school curriculum. Recently, the federal government mandated the School Wellness Policy, which enforces the removal of fried and high calorie foods from school cafeterias (Belansky et al., 2009). The primary aim was to increase health literacy through the school system as these settings provide easy access to children (Belansky et al., 2009). More recently, First Lady Michelle Obama launched the “Let’s Move” campaign as a universal effort to tackle childhood obesity. The teaching of food preparation skills was the main part of the agenda. The Dietary Guidelines of America (2010) endorsed this recommendation by encouraging individuals and families to optimize nutrition literacy, gardening, and cooking skills (McGuire, 2011).

In other developed countries like Germany, Australia, Canada, and the United Kingdom, researchers have intervened at the micro-level (household/individual level) and macro-level (policy level) to understand eating behaviors and diet-related diseases (Moore, Murphy, Tapper, & Moore, 2010). Few studies have examine food related preferences, attitude, and behavior toward meals cooked at home (Cunningham-Sabo & Lohse, 2014; Nelson, Corbin, & Nickols-Richardson, 2013).

Many studies have investigated dietary practices, eating habits, and nutrient content of fast and convenience foods (Boutelle, Fulkerson, Neumark-Sztainer, Story, & French, 2007; Rehm & Drewnowski, 2015; Tate et al., 2015). Multiple factors such as availability, accessibility, and parental modeling are well documented as impediments to healthy food outcomes among children (Wardle & Cooke, 2008). Regardless of geographical locations, studies show increased food preparation education is important to health outcomes (Dubowitz, Ncube, Leuschner, & Tharp-Gilliam, 2015; Howlett, Davis, & Burton, 2015).

DIETARY PRACTICES

Some primary recommendations made were to promote healthy home cooked meals and increase diets rich in fruits and vegetables (Condrasky, Williams, Catalano, & Griffin, 2011). Currently, less than 20% of American children ages 6-11 years are meeting the daily dietary recommendations for fruits and vegetables (Lorson, Melgar-Quinonez, & Taylor, 2009). Likewise, home prepared meals have decreased significantly over the last several years. During the mid-1980s more women started working away from home, and processed foods (e.g, frozen, ready-prepared, and convenient) were introduced. In addition, there was an increase in technologies to assist with household chores and accommodate a fast paced lifestyle (Anderson, Bell, Adamson, & Moynihan, 2002). Also, TV dinner was created and distributed to facilitate eating while watching television among families (Bernstein & Carstensen, 1996; Smith, 2001). As a result, some authors have speculated that “ready-prepared-meals” (i.e.,

processed or meals not prepared at home) and other societal shifts account for these changes (Anderson, Wrieden, Tasker, & Gregor, 2008).

Commercially prepared foods have high fats, salt, and sugar, which are strongly associated with limited food preparation skills. A recent study found that youths are making decisions on food choices due to limited parental involvement in home cooked meals (McWhinney, McKyer, Outley, & McDonald, 2010). In addition, other researchers found that lack of cooking skills was a barrier for preparing healthy home cooked meals (Smith & Popkin, 2013; Van der Horst, Brunner, & Siegrist, 2011).

Individual's food preparation literacy and eating practices play a key role in managing diet-related diseases, specifically in children and adolescents. Studies suggest parents are the primary role models in the home and are very instrumental in helping children make healthy food choices to prevent the onset of chronic diseases (Devine et al., 2009; Devine et al., 2006). Research on family meals and socio-demographic characteristics indicated that mothers' unemployment status are positively associated with children's eating practices (Berge, Hoppmann, Hanson, & Neumark-Sztainer, 2013). Additionally, many studies have noted that the time parents spend with their children, family structure, and meal times are diminishing within the home (Larson, Perry, et al., 2006 ; (Holsten, Deatrck, Kumanyika, Pinto-Martin, & Compher, 2012). Changes in the home and food system can be complex to ensure adequate food intake (Smith et al., 2013).

Food preparation literacy interventions among adolescents is not widespread; relatively few studies are reported in current literature (Adekeye et al., 2014; Chen et al.,

2014). Researchers have argued that nutrition literacy at high schools should be reintroduced to help adolescents obtain the necessary skills for food preparation and reverse low food preparation literacy (Townsend, Ganthavorn, Neelon, Donohue, & Johns, 2014). At present, children and adolescents may be at risk to miss learning the techniques to prepare a balanced meal.

Since many rural, underserved populations are challenged with great disparities related to food consumption, health outcomes, and diet-related disease (Smith & Popkin, 2013; Van der Horst, Brunner, & Siegrist, 2011; Wardle & Cooke, 2008; Devine et al., 2006), it is important to understand the quality and types of empirical studies in existing literature. The increase in convenience (e.g., fast or commercial) food consumption has changed the traditional dynamics for home prepared meals. The overarching purpose of this dissertation is to better understand how food preparation literacy is transmitted from parents to children and to explore strategies used to sustain home cooked meals. Each study was guided by its own purpose and research questions

Study 1:

Purpose: To summarize published empirical studies that focus on food preparation literacy among children and adolescents and to answer how the present empirical studies conceptualize food preparation literacy for children and adolescents.

Study Question (1) what is the status of the research literature specific to food preparation literacy for children and adolescents? (1) What types and quality of studies are available in the extant literature? (3) How does

the present empirical literature conceptualize food preparation for children and adolescents?

Study 2:

Purpose: To seek insight into adolescents' experiences in food preparation, assess parents' food preparation skills, and discuss parental teaching strategies in the home.

Study questions: (1) how do adolescents conceptualize food preparation and perceive their cooking experiences at home? (2) How are food preparation skills taught in the home of adolescents? (3) How do parents describe the foundation for their food preparation skills?

This dissertation is presented in four chapters. Chapter I introduces the overall structure of the dissertation and provides an overview of the literature. Chapters II and III are formatted as manuscripts, and will be presented independently to appropriate peer-reviewed journals. Chapter II is a systematic review of empirical studies on food preparation literacy in adolescents' homes. Chapter III presents findings from photovoice and semi-structured interviews on how food preparation literacy is transferred within the home of adolescents. It also presents parents' perceptions of their learning experiences regarding food preparation. Chapter IV discusses the overall project and makes recommendations for future research.

CHAPTER II

FOOD PREPARATION LITERACY AMONG ADOLESCENTS: AN ASSESSMENT OF EMPIRICAL LITERATURE AND METHODOLOGICAL QUALITY

INTRODUCTION

Diet-related diseases have become a central issue for children and adolescents. According to the National Health and Nutrition Examination Survey (NHANES), approximately 16.9% of children between 2 to 19 years of age are obese (Ogden & Carroll, 2012). The obesity prevalence is higher among adolescents aged 10 to 17, specifically those living in rural, underserved areas and those with a low socioeconomic status (Cutler et al., 2008; Flegal et al., 2010). In addition, analyses of population data reveal many American children and adolescents fail to meet dietary recommendations for fruit and vegetable consumption (Kimmons, Gillespie, Seymour, Serdula, & Blanck, 2009; Krebs-Smith et al., 1996).

Studies of interventions have shown that knowledge of food preparation increases fruit and vegetable consumption in children (Hearst, Kehm, Sherman, & Lechner, 2014; Neumark-Sztainer, Wall, Perry, & Story, 2003). Knowledge is also a prerequisite to motivate and engage children in preparing meals at home (Gracey, Stanley, Burke, Corti, & Beilin, 1996; Larson, Perry, et al., 2006). Therefore, healthy eating at home requires food preparation and meal planning knowledge/skills to achieve the established goals and guidelines of Healthy People Objectives 2020. Additionally,

the guidelines suggest that the development and distribution of nutritional messages are essential to address growing dietary related diseases and poor eating habits.

Food Preparation Literacy

The literature defines literacy as having a set of skills and possessing the ability to apply these skills in learning processes (Peerson & Saunders, 2009). Similarly, food preparation literacy, an emerging term in the literature, is defined as an individual's ability to plan, manage, and prepare tasty food items or dishes with limited directions (Vidgen & Gallegos, 2014). Food preparation practice is complex and demanding, but plays a crucial role in health outcomes. Low literacy in food preparation may result in failure to consume healthy foods, increase diet-related diseases (hypertension, obesity, heart disease), and, in the long term, cause death.

The Institute of Medicine (IOM) has estimated that about 90 million Americans cannot understand medical information (Schwartzberg, Cowett, VanGeest, & Wolf, 2007), which can be associated with unhealthy eating practices. Traditionally, food preparation was taught at home by older adults (mainly women) and at school by home economics teachers. Some researchers identify changes in the food system, household structure, and physical environment as being related to the decline in meal preparation skills (Van der Horst et al., 2011). Other studies have suggested that limited food preparation literacy may result from advances in technology, parents' working away from homes, time constraints, and consumption of commercially manufactured foods on a daily basis (McIntosh et al., 2010; Morin, Demers, Turcotte, & Mongeau, 2013). Prior qualitative studies explored the perceptions of dual and single parents of adolescents

about home cooked meals (Berge et al., 2013; Van der Horst et al., 2011). They found that both categories of parents believed that time plays a factor in home prepared food. Another study compared food preparation practices of working mothers and non-working mothers and found that time was a major barrier to home prepared meals (Rose, 2007).

Trends in Food Consumption

Since the 1980s, there is a recorded decline in the United States and other countries in meals prepared at home (Ebbeling, Pawlak, & Ludwig, 2002; Nelson et al., 2013). In highly developed nations (e.g., United States, Canada, Australia, and Germany), increased fast food consumption is linked to non-communicable diseases and poor eating practices (Taveras et al., 2005). The National Food Consumption Survey (NFCS) showed that the average American family consumes more than 32% of their calorie intake away from home regardless of ethnicity and socioeconomic status (Guthrie, Lin, & Frazao, 2002). As a result, fast food establishments in the United States have grown tremendously – from ~49,100 to ~878,000 between the mid-1970s and the present (Lin, Guthrie, & Frazao, 1999; Nielsen, Siega-Riz, & Popkin, 2002). The ubiquity of fast food restaurants remains a nutrition problem and contributes to excess weight in children because of the high sodium and sugar content and high caloric density of meals prepared and purchased at fast food establishments (Lin, 1999)

Attempts to Improve Health among Children

In an attempt to reduce diet-related diseases among children and adults, the United States Department of Agriculture (USDA) and the United States Department of

Health and Human Services published the Dietary Guidelines for Americans 2010. The guidelines recommend increasing the numbers of meals prepared and consumed at home. Specific suggestions were made to target improving nutrition literacy, cooking skills, and gardening to promote more home prepared meals among families (McGuire, 2011). The First Lady Michelle Obama's "Let's Move!" campaign includes strategies to increase awareness and highlight the need for food preparation literacy in the home and school.

Many studies have investigated dietary practices, eating habits, and nutrient content of fast and convenience foods. Few studies have examined food related preference, attitude, and behavior toward cooking at home (Cunningham-Sabo & Lohse, 2014; Nelson et al., 2013). Regardless of the research, whether national or international, the primary recommendation to reduce chronic diseases is to improve food preparation knowledge of parents and children (Byrd-Bredbenner, 2004). Multiple determinants, such as availability, accessibility, and parental modeling, repeatedly emerged as impeding factors to healthy food preparation among children (Powell, Slater, Mirtcheva, Bao, & Chaloupka, 2007; Ventura & Birch, 2008; Wardle & Cooke, 2008).

Food preparation literacy may establish and sustain positive dietary habits and reduce chronic disease; yet food preparation literacy has declined. It is unclear what opportunities are available to adolescents to learn the basic techniques of preparing meals. Therefore, it is important to understand the food preparation education available to adolescents.

The aim of this systematic literature review was to summarize published empirical studies that focused on food preparation literacy among children and adolescents and identify any knowledge gaps and recommend future research directions. This study will seek to answer the following questions:

1. What is the status of the research literature specific to food preparation literacy for children and adolescents?
2. What types and quality of studies are available in the extant literature?
3. How does the present empirical literature conceptualize food preparation for children and adolescents?

METHODS

This systematic review was conducted to summarize published empirical studies that focus on food preparation literacy among children and adolescents and to answer how the present empirical studies conceptualize food preparation literacy for children and adolescents. This study followed the PRISMA guidelines (Moher, Liberati, Tetzlaff, & Altman, 2009) and focused primarily on published empirical articles that investigated food preparation literacy.

Study Selection

A comprehensive literature search was done between October 2014 and February 2015 through MEDLINE (Ovid), Academic Search Complete (EBSCO), and Embrace (Ovid) to identify peer-reviewed articles. Initial search terms included “cooking skills,” “food preparation education,” “nutrition education,” “food literacy,” “meal preparation,”

and “rural families.” The search was initially limited to studies conducted within the United States. The first search retrieved a small number (n=5) of articles; so additional combinations of the following key terms were entered in the databases to expand the search: “obesity,” “health,” “culinary,” “children and adolescents” and “diet-related diseases.” Also, the constraint regarding country of publication was removed. The search terms were chosen based on researcher’s expertise and a review of the literature. Publication years were limited to 2005 through 2015.

The time frame for the search (2005-2015) was selected because recommendations to improve health outcomes were implemented at the macro (policy) and micro (individual) level between the early 1980s and 2005 (Lichtenstein et al., 2006; Story, Kaphingst, Robinson-O'Brien, & Glanz, 2008). For example, a new recommendation about portion sizes and the implementation of MyPyramid with physical activity guidelines for the general population was created in 2005. The federal government also mandated the implementation of school health policies that would eliminate high fat, high calorie, and high sodium foods from school cafeterias. During this era, trans-fat foods were banned from all fast food restaurants (Mozaffarian & Stampfer, 2010).

Inclusion and Exclusion Criteria

To be included for review, articles had to meet the following criteria: 1) report a study on food preparation and cooking skill education; 2) include children, aged 0 to 18, and one or both parents; 3) report qualitative or quantitative studies; 4) be peer-reviewed articles published in an English-language journal. Editorials and letters to the editor,

non-empirical papers (including review articles and book reviews), and articles with outcomes that did not focus on food preparation education and cooking skills were excluded.

Data Extraction

All articles were imported into Reworks and screened according to the Garrard Matrix Method of systematic literature review in health sciences (Garrard, 2013). Study characteristics (study aim/purpose, study design, country of study/setting), research methods (data collection methods, type of intervention, theoretical approach, data analysis methods), participant characteristics (sample size, race/ethnicity), and primary findings (food preparation planning, cooking) were extracted from each eligible article (Table 1).

Two screening procedures were conducted on all retrieved articles. The first screening procedure was done on abstracts only to ensure the articles met the established criteria. Articles that did not meet these criteria were excluded (Figure 1). For the second screening, the eligible articles were read in their entirety. At this stage, some articles were excluded because they mentioned children, parents, and food preparation in the title and abstract, but had nothing to do with delivering food preparation literacy.

Table 1 Criteria for Assessing Food Preparation Literacy Components in the Literature

Component	Sample Questions	Sample Options
Meal planning	Which aspects of meal planning are included in this study?	Grocery shopping, measuring ingredients, assembling utensils for serving foods
Food preparation	Which aspects of food preparation are included in this study?	Microwaving, using stove (gas or electric), cooking baking, steaming, etc.

Quality Appraisal of the Studies

To ensure that coding and extraction were consistent across all articles, an extraction coding instrument was developed in Qualtrics Online. After critically examining the abstracts, non-relevant studies were eliminated and remaining full texts were reviewed. The two questions on the coding instrument were concerned with food preparation involving parents and children. They were also used as a screener for the full review. A second reviewer reviewed the same articles and a comparison was done to capture any inconsistency. Deliberation continued until consensus was reached.

Methodology of Quality Assessments

The qualitative and quantitative studies were assessed using two different methodological quality scales. The methodological quality scale for qualitative studies was obtained from the Critical Appraisal Skills Program (CASP) Qualitative Research Checklist.

Critical Appraisal Skills Program (CASP) Qualitative Research Checklist. The instrument has 10 questions to evaluate the research aim, methods, design, recruitment strategies, data collection, relationship between the researcher and the participants, ethical issues, data analysis rigor, findings, and research value. Each question was

designed with three response choices: “Yes,” “No,” and “Cannot tell.” For this study, only seven questions were utilized. The CASP instrument did not include intervention and recruitment methods, which were relevant to this study. Nor were there numeric values associated with the three response choices. Changes were made to participant recruitment description and study setting characteristics, and is described in a latter section of this paper.

Methodological Quality Assessment Tool – Quantitative. The quantitative methodological quality scale was adopted from a prior study (Lu et al., 2014), and modified to align with the purpose of the current study. The studies are evaluated on ten characteristics: 1) study design, 2) sample size, 3) definition of construct-of-interest (food preparation literacy), 4) data analytical technique, 5) inclusion of control variable(s), 6) multicollinearity testing, 6) data reliability testing and reporting, 7) data validity testing and reporting, 8) participant recruitment details, 9) participant characteristic details, and 10) setting details. The MQS possible points range from a low of 4 to high of 24; higher scores are indicative of rigor.

Assessment of Food Preparation Literacy Components

A questionnaire was developed by the researcher to assess the components of food preparation literacy reported in the literature. Open-ended questions were used to allow a range of responses. To capture all the components of food literacy, general questions were asked pertaining to meal planning, food preparation, and food tasting. Further evaluation was conducted on the responses, and cross comparisons between option, participants, and study settings were examined.

RESULTS

The results are presented in six sections: 1) overview of studies; 2) characteristics of studies; 3) food preparation literacy; 4) cooking skills; 5) participant dyads involved in food preparation literacy; and 6) qualitative and quantitative assessment. Table 2 provides full details about the studies.

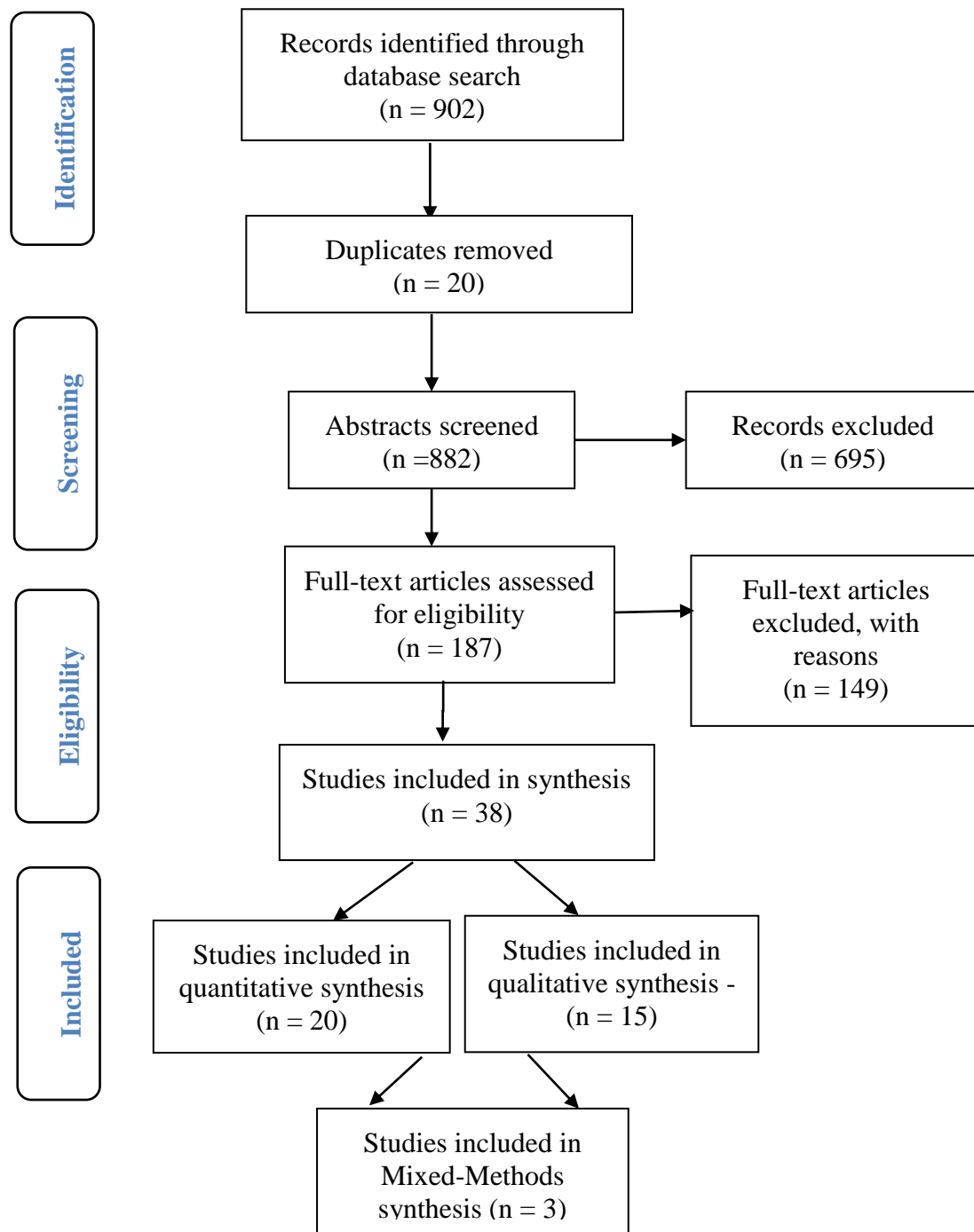
Overview of the Studies

A total of 902 articles were identified from the three databases. A total of 20 duplicates were removed, and 695 articles were excluded after abstract review. One hundred and eighty-seven (187) articles underwent full-text screening, from which 149 were eliminated because they did not meet the age and food preparation criteria.

Characteristics of the Studies

Information was extracted from 38 articles as shown in Figure 1. The articles were obtained from 14 journals. These were *Public Health Nutrition* (n=4), *Malaysian Journal of Nutrition* (n=1), *Appetite* (n=9), *Journal of the Academy of Nutrition and Dietetics* formerly (*American Dietetic Association*) (n=8), *Journal of Primary Care & Community Health* (n=1), *Journal of Nutrition Education and Behavior* (n=5), *Journal of Community Health Nursing* (n=1), *Canadian Journal of Dietetic Practice & Research* (n=1), *Journal of the British Human Nutrition and Dietetics* (n=1), *American Journal of Preventive Medicine* (n=1), *British Food Journal* (n=1), *Journal of Nutrition Community and International Nutrition* (n=1), *Journal of Primary Care and Community* (n=1), and *Health and Diabetes Education Journal* (n=1).

Figure 1. Systematic Literature Search for Articles Published Between 2006 and 2015 Related to Food Preparation Literacy.



Note. This flowchart is an adaption of Garrard, Judith. (2013). *Health sciences literature review made easy*: Jones & Bartlett Publishers.

While the search encompassed 2005-2015, all the identified studies were published between 2006 and 2014 in various countries. Number of articles published per year was as follow: 1 in 2006; 2 in 2008; 7 in each year for 2010, 2011, 2012; 6 per year for 2013 and 2014. No articles were published in 2005, 2007 2009 and 2015 before February. The average number of articles related to food preparation literacy that was published each year over the 10 year period was 3.6, standard deviation 3.238.

Approximately half of the studies (n=21, 58%) were conducted in the United States of America; 5 (13%) were conducted in Canada; 2 (5%) in Switzerland; 3 (7.8%) in Germany, and 1 (2.6%) each in Australia, United Kingdom, France, England, New Zealand, and Malaysia. One article did not name the country. Twelve articles were written by the same team of co-authors (Berge et al., 2013; Fulkerson et al., 2011; Fulkerson, Story, Neumark-Sztainer, & Rydell, 2008; Larson, Story, Eisenberg, & Neumark-Sztainer, 2006; Ohly et al., 2013; Pettinger, Holdsworth, & Gerber, 2006; Van der Horst et al., 2011; van der Horst, Ferrage, & Rytz, 2014). Some articles with the same lead authors or co-authors were published in the same journals (Berge et al., 2013; Fulkerson et al., 2008; Larson, Story, et al., 2006). Twenty-six articles (n=28) did not describe the study settings. Seven (n=7) of the studies were conducted in urban/suburban areas, two (n=2) in rural areas, and one (n=1) in both rural and urban/suburban areas. The interventions were carried out at home (n=8), in school (n=12), and in the community (n=10). Eight articles did not specify where the study was conducted.

In most of the studies (60%), the participants were parents and children (n=23). The other studies enrolled mothers and children (n=9), fathers and children (n=2), and

children only (n=4). Except in two cases, none of the studies conducted outside the US reported race or ethnicity. Studies conducted in the US documented race/ethnicity as Latino/Hispanic, African American, White, Mexican, Asian, Somali, and Ethiopian. The sample sizes of the reviewed studies ranged from 4 to 12,600.

The aim of this study was to summarize research on food preparation literacy among children and adolescents. Results of the analysis revealed the following major findings: 1) cooking skills was the factor most frequently studied; 2) food preparation literacy was not clearly conceptualized or operationalized in most studies; 3) urban and suburban settings were used more than rural settings; 4) study samples tended to focus on child/parent dyads; 5) convenience sampling was most often utilized; and 6) a cross-sectional research approach was more common than an experimental or randomized approach.

Conceptualization of Food Preparation Literacy

Most studies (80%) were not consistent in how they conceptualized or operationalized the components of food preparation literacy (FPL). Only four studies (10.5%) (Castro, Samuels, & Harman, 2013; Morin et al., 2013; Möser, 2010; Ohly et al., 2013) included all the established components of FPL (i.e., grocery shopping, recipe development, ingredients usage, cooking skills, food preparation, menu planning, and meal preparation). Eight articles (21.0%) reported on food preparation (Appelhans, Waring, Schneider, & Pagoto, 2014; Chen et al., 2014; Coleman et al., 2010; Evans et al., 2011; Holsten et al., 2012; Leech et al., 2014; Pettinger et al., 2006; Slater, Sevenhuysen, Edginton, & O'neil, 2011); five (13.2%) on meal planning (Fulkerson et

al., 2011; Fulkerson et al., 2008; Morin et al., 2013; Sealy, 2010; Woodruff & Kirby, 2013), two (5.3%) on meal preparation (McIntosh et al., 2010; Möser, Chen, Jilcott, & Nayga, 2012), one (2.6%) on ingredients usage, and two (5.3%) on recipe development (Noradilah & Zahara, 2012; Van der Horst et al., 2011). One study included all the components of FPL along with table setting and utensil cleaning (Möser, 2010). An additional five articles (13.2%) reported grocery shopping and budgeting with food preparation (Berge et al., 2013; Beshara, Hutchinson, & Wilson, 2010; Kramer et al., 2012; Larson, Story, et al., 2006; Van der Horst et al., 2011).

Cooking Skills

Sixteen studies (42.1%) (Blake, Wethington, Farrell, Bisogni, & Devine, 2011; Gatto, Ventura, Cook, Gyllenhammer, & Davis, 2012; Hearst et al., 2014; Martinez, Rhee, Blanco, & Boutelle, 2014; Möser et al., 2012; Nackers & Appelhans, 2013; Ohly et al., 2013; Rennie & Wise, 2010; Simmons & Chapman, 2012; Slusser et al., 2011; Thomas & Irwin, 2013; Thongudomporn, Chongsuvivatwong, & Geater, 2010; Townsend, Johns, Shilts, & Farfan-Ramirez, 2006; Van der Horst et al., 2011; White et al., 2011) examined cooking skills: five were qualitative, eight quantitative, and three mixed methods studies.

The qualitative studies explored parents' perceptions of engaging children in home cooked meals (Gatto et al., 2012; Martinez et al., 2014), cultural influences on cooking skills (Coleman et al., 2010) and children's learning outcomes from cooking demonstrations (Slusser et al., 2011; White et al., 2011). The quantitative studies measured cooking skills with fruit and vegetable consumption (Castro et al., 2013;

Hearst et al., 2014; van der Horst et al., 2014). Only two studies measured gender influences on cooking skills or food preparation (Kramer et al., 2012; McIntosh et al., 2010). The studies that did not include cooking skills reported meal planning, food preparation, ingredients usage, and tasting as dependent variables. The mixed methods studies had most of the components of FPL.

Regarding intervention and cooking demonstration, only seven studies (18.4%) reported such activities (Beshara et al., 2010; Coleman et al., 2010; Evans et al., 2011; Gatto et al., 2012; Kramer et al., 2012; Morin et al., 2013; Möser et al., 2012). Four of these studies were conducted in the US, one each in Germany and Canada. One study did not specify the study location. Of the 38 studies in the review, only seven (18.4%) were theory driven (Beshara et al., 2010; Coleman et al., 2010; Evans et al., 2011; Gatto et al., 2012; Kramer et al., 2012; Morin et al., 2013; Möser, 2010). Two of the seven theory-driven studies focused on cooking skills (Beshara et al., 2010; Gatto et al., 2012). The social cognitive theory was used to develop the guided interview questions in the studies (Coleman et al., 2010; Gatto et al., 2012; Chen et al., 2014).

Participant Involved in FPL Studies

Over half (n=22) of the studies included children-parents dyads (parents' gender not specified), nine mother-children dyads, two father-children dyads, and five children only. While all studies included at least one of the FLP components, none of the parents-child dyads were consistent with all the components of the FPL. Of the studies that enrolled children-parents dyads, five were conducted in schools and focused on meal planning, meal preparation, recipe development, and grocery shopping. Another four

studies were conducted in homes with research concentrating on cooking skills, ingredients, and meal preparation (table setting and dish washing). Only three studies were conducted in the communities. They examined meal planning, grocery list, ingredients, and meal preparation.

Of the studies that enrolled mother-children dyads, two were conducted in schools and comprised cooking lessons and practices. Another two studies were conducted in the home and focused on shopping and meal preparation. Two were conducted in the community and incorporated food preparation, specifically cooking, budgeting for food, selecting recipes, and preparing food. Three studies did not describe study settings but reported cooking skills and meal planning as components of the studies.

Only two of the 38 studies explored father-children dyads, and those studies were conducted in a school setting. The study emphasized cooking methods such as roasting, cooking, baking, boiling, and broiling. Five studies focused on children only. They were conducted in school and community settings. The studies conducted in schools mainly involved aspects of food preparation (cooking) and tasting. The other three studies focused on cooking and were conducted in the community. Only one study included cooking lessons, tasting, and menu planning.

Table 2 Characteristics of the Food Preparation Literacy studies (n=38)

Lead Author / year / country	Journal Name	Subjects/ sample size	Study methods & settings	Components of FPL	Selected findings
Jayne A. Fulkerson (2011); USA	<i>Journal of Nutrition Education and Behavior</i>	Parent(s) and Children n=27	Qualitative Community	Family meals	A consistent theme regarding what parents would like to change about their family meal was a desire for children's help with meal preparation but avoiding it because of the mess it makes and the time commitment.
Heather Clarke Thomas (2013); Canada	<i>Canadian Journal of Dietetic Practice & Research</i>	Children Only n=4	Qualitative Community	Cooking	Applying cooking skills at home and expressing cultural food preferences and traditions were important to some youth.
Jerica M. Berge (2013) USA	<i>The Academy of Nutrition and Dietetics.</i>	Parent(s) and Children n=56	Qualitative Home	Budgeting Shopping, Planning, Meal Preparation	Parents from dual-headed households also identified that family meals provided a training ground for healthy behaviors to occur through modeling and parental direction, which ultimately promoted healthful eating behaviors in children.
Dean Simmons (2012); Canada	<i>British Food Journal</i>	Parent(s) and Children n=120	Qualitative Community	Cooking	The terms "cooking" and "cooking skills" were used in a broad and generic manner by the interviewers.
Joyce Slater (2011); Canada	<i>Journal of Nutrition Education and Behavior</i>	Parent(s) and Children n=11	Qualitative did not describe	Food Preparation	Many of the foods children preferred were perceived to be unhealthy by the mothers, but were frequently purchased because they knew they would be eaten, or it was believed that the children should have their way at least some of the time.

Notes: The table is organized by research type (quantitative articles).

Table 2 Continued

Lead Author/ year/ country	Journal Name	Subjects/ sample size	Study methods & settings	Components of FPL	Selected findings
Alicie H. White (2011); USA	<i>Journal of Nutrition Education and Behavior</i>	Mother and Children n=95	Qualitative Did not describe	Cooking skills	Many mothers reported that they did not involve their children in food preparation activities. They doubted their children's abilities to help prepare food and expressed concerns about the safety and time required for such activities.
Suzanna M. Martinez (2014); USA	<i>Journal of the Academy of Nutrition & Dietetics</i>	Mother and Children n=41	Qualitative School	Cooking practices	Mothers say they are responsible for teaching their children how to "eat well" and teaching their children nutritious eating habits at an early age. Traditionally, mothers learned how to prepare, cook, and eat wholesome foods, and this cultural practice was generally passed on to their children.
Glenn Flores (2012); USA	<i>Journal of the American Dietetic Association</i>	Parent(s) and Children n=19	Qualitative Did not describe	Tasting	Parents stated a willingness to substitute healthy for unhealthy foods and drinks and to prepare traditional meals differently to help their child lose weight.
Yvette M. Sealy (2010); USA	<i>Journal of Community Health Nursing</i>	Mother and Children n=34	Qualitative Did not describe	Meal Planning	Ethnicity, culture, and time constraints influenced meal planning.

Notes: The table is organized by research type (qualitative articles).

Table 2 Continued

Lead Author/ year/ country	Journal Name	Subjects/ sample size	Study methods & settings	Components of FPL	Selected findings
Joanna E. Holsten (2012); USA	<i>Appetite</i>	Children Only n=47	Qualitative School	Food preparation	Children's food choices in the home emerged as a process that involved three interacting components - the child, the parent, and the food - embedded within the context of time.
Wendelin Slusser (2011); USA	<i>Public Health Nutrition</i>	Father and children n=64	Qualitative School	Cooking-roasting, baking, broiling, or boiling	Parents expressed a desire for nutrition classes and almost all of them said they would attend a nutrition program at their child's school. Topic areas of interest included what to purchase, how to cook healthier foods, how to encourage their children to eat healthier, and how to read food labels.
Alexandra Evans (2011); USA	<i>Journal of the American Dietetic Association</i>	Children Only n=550	Qualitative School	Food Preparation Skills tasting	Mothers support healthy eating among their children by referencing positive role models; reinforcing children's healthy behaviors through motivation; getting children to taste new foods; and through creative food preparation, such as yogurt with fruit, apples with peanut butter, and orange juice mixed with beet juice.

Notes: The table is organized by research type (qualitative articles).

Table 2 Continued

Lead Author/ year/ country	Journal Name	Subjects / sample size	Study methods & settings	Components of FPL	Selected findings
Van der Horstet (2011); Switzerland	<i>Public Health Nutrition</i>	Parent(s) and Children n=807	Quantitative	Cooking skills, ingredients, tasting	Males were more positive about the nutritional values and taste of ready-prepared meals compared to women; males have less cooking skills.
Noradilah MJ (2012); Malaysia	<i>Malaysian Journal of Nutrition</i>	Parent(s) and Children n= 68	Quantitative School	Recipe, tasting	Consumption of the test vegetable significantly increased from 22 g on the 1st day to 28 g on the 3rd day; $z = -3.317$, $P=0.002$.
Pascale Morin (2013); Canada	<i>Appetite</i>	Parent(s) and Children n=417	Quantitative Community	Meal planning, grocery list, ingredients, meal preparation, recipe.	Parents with university degrees, a flexible schedule work, and part-time work felt more empowered to choose healthy and nutritious foods at the grocery store.
Christine E. Blake (2011); USA	<i>American Dietetic Association</i>	Parent(s) and Children n=465	Quantitative Home	Cooking	Home cooking cluster included considerably more married fathers with unemployed spouses and more home cooked family meals.

Note. The table is organized by research type (quantitative articles).

Table 2 continued.

Lead Author / year / country	Journal Name	Subjects /sample size	Study methods & settings	Components of FPL	Selected findings
Rebecca M. Leech (2014); Australia	<i>Appetite</i>	Parent(s) and Children n=155	Quantitative School	Food preparation	Weekly frequency of helping to prepare dinner was significantly higher among girls than boys.
Jayne A. Fulkerson (2008); USA	<i>American Dietetic Association</i>	Parent(s) and Children n=107	Quantitative School	Meal planning and preparation	Meal preparation was primarily an adult task, with 77% of parents reporting one adult, 22% reporting two adults, and 1% reporting meal preparation by another adult in the home. Almost half of the parents (43%) reported that their child never/ rarely helped prepare dinner.
Anke Möser (2012); Germany	<i>Appetite</i>	Parent(s) and Children n=12600	Quantitative Home	Food Preparation, cooking, table setting, washing up (dishes), food preserving, shopping	Women with two or more children in their home spent more time on food preparation than women with one child. But 10 years later, mothers with two or more children spent less time on cooking than women with one child.

Notes: The table is organized by research type (quantitative articles).

Table 2 Continued

Lead Author / year / country	Journal Name	Subjects / sample size	Study methods & settings	Components of FPL	Selected findings
Bradley M. Appelhans (2014); USA	<i>Appetite</i>	Parent(s) and Children n=103	Quantitative Home	Food preparation	More frequent family meals and consumption of home prepared dinners were associated with healthier child dietary intake in several areas
Mary O. Hearst (2014); USA	<i>Journal of Primary Care & Community Health</i>	Parent(s) and Children n=25	Quantitative Did not describe	Cooking Skills and Preparation,	Participants reported learning novel information, as well as using the new information when cooking for their children.
William Alex McIntosh (2010); USA	<i>Appetite</i>	Parent(s) and Children n=312	Quantitative Did not describe	Meal preparation	Mothers' perception of time pressures on meal preparation had a negative, indirect effect on the frequency of children's participation in family dinners by reducing mothers' meal planning.
Monica Beshara (2010); USA	<i>Appetite</i>	Mother and Children n=120	Quantitative Home	Shopping, meal preparation	Mothers who were more confident in their ability to prepare a healthy meal served healthier evening meals than those who were less confident.

Notes: The table is organized by research type (quantitative articles).

Table 2 Continued

Lead Author / year / country	Journal Name	Subjects/ sample size	Study methods & settings	Components of FPL	Selected findings
Udom Thongudomporn (2010); Thailand	<i>Journal of Nutrition Education & Behavior</i>	Mother and Children n=78	Quantitative school	Cooking	The type of food, child's sex, mother's education, mother- child age difference, and the frequencies that the mother cooked for or ate with the child did not have an influence on the mother- child disagreement about cooking.
Anke Möser (2012); Germany	<i>Public Health Nutrition</i>	Mother and Children n=1027	Quantitative Home	Meal Preparation	Employed mothers spent on average around 30 min less on meal preparation than their non-employed counterparts. Mothers living in households in East Germany spent less time on cooking than mothers in West Germany.
Clare Pettinger (2006) France, England	<i>Public Health Nutrition</i>	Parent(s) and Children n=1592	Quantitative Community	Food preparation	Almost two-thirds of French respondents (62%) reported cooking a meal from raw ingredients daily, compared with less than a quarter of English respondents (22%).

Notes: The table is organized by research type (quantitative articles).

Table 2 Continued

Lead Author / year / country	Journal Name	Subjects / sample size	Study methods & settings	Components of FPL	Selected findings
Rennie. C (2010); UK	<i>Journal of the British Human Nutrition and Dietetics</i>	Father and children n=50	Quantitative Did not describe	Cooking and tasting	Steaming and microwave steaming were rated significantly higher than boiling for broccoli (for acceptability 6.2 and 7.1 versus 5.1; $P < 0.001$). Carrots were considered better for flavor and overall acceptability.
Sarah J. Woodruff (2013); Canada	<i>Journal of Nutrition Education & Behavior</i>	Parent(s) and Children n=145	Quantitative School	Meal planning	Participants reported that 87% of food planning or preparation was being done by the mother or stepmother (vs. 30% by the father or stepfather).
Marilyn S. Townsend (2006); US A	<i>Journal of Nutrition Education & Behavior</i>	Children Only n=5111	Quantitative Community	Cooking Lessons, Nutrition Education Tasting, Menu Planning	34% of children had improved scores for Eat a Variety of Foods, 53% for Nutrition Knowledge, 31% for Food Selection, and 68% for Food Preparation Skills and Safety Practices.
Nicole M. Gatto (2012); USA	<i>Journal of the Academy of Nutrition & Dietetics</i>	Mother and Children n=104	Quantitative School	Cooking lesson	After the 12-week program, LA Sprouts participants had a greater change in their perceptions that “cooking is easy” ($P=0.01$) and “gardening is easy” ($P=0.05$), but these two differences were no longer statistically significant after adjustment for multiple comparisons.

Notes: The table is organized by research type (quantitative articles).

Table 2 Continued

Lead Author / year / country	Journal Name	Subjects / sample size	Study methods & settings	Components of FPL	Selected findings
Rebecca F. Kramer (2011); USA	<i>The Journal of Nutrition and International Nutrition</i>	Parent(s) and Children n=242	Quantitative community	Food preparation, food purchasing	Adolescents who cooked more frequently tended to use unhealthier cooking methods. Adolescent children of caregivers who used healthier cooking methods tended to use healthier cooking methods when they cooked for themselves.
Nicole M. Larson (2006); USA	<i>Journal of the American Dietetic Association</i>	Parent(s) and Children n=3699	Quantitative-School	Food Preparation and Purchasing Behaviors	The majority of adolescents helped prepare dinner (69%) and half helped shop for groceries (50%) at least once during the past week.
Qiong Chen (2014); USA	<i>Appetite</i>	Parent(s) and Children n=530	Mixed methods Home	Food Preparation, recipe, ingredients	Although cooking and cleanup time may be possible hindrances, many parents readily participated when the child requested to take part in the home cooking activities. Additionally, two busy, working white parents noted that the program was “a nice reminder to take the time in the kitchen with your child.”

Notes: The table is organized by research type (quantitative and mixed methods articles).

Table 2 Continued

Lead Author/ year/ country	Journal Name	Subjects/ sample size	Study methods & settings	Components of FPL	Selected findings
Dina C. Castro (2013); USA	<i>American Journal of Preventive Medicine</i>	Mother and Children n=120	Mixed Methods Community	Cooking lessons, grocery shopping, tasting, meal planning,	There was an increase of 146% (P<0.001) in the availability of fruits and vegetables and an increase in the consumption of fruits (28%; P<0.001) and vegetables (33%; P<0.001) among children of families participating in the GHK program.
Heather R Ohly (2012); New Zealand	<i>Public Health Nutrition</i>	Mother and Children n=261	Mixed methods Community	Food Preparation, cooking , Budgeting for food, Recipe	Over a third (38%) of parents said they wanted more advice on healthy eating for children. Less educated parents showed the greatest interest in learning more about several aspects of healthy eating: what a 'healthy diet' means, how to prepare and cook healthy food, how to understand food labels, budgeting for food, examples of healthy food and snacks for children, appropriate portion sizes for children, and ways to encourage children to eat well.

Notes: The table is organized by research type (mixed methods articles)

Quality Assessment for Qualitative Studies

Fifteen articles were identified as qualitative studies and Table 3 provides results of the critical assessment of the qualitative studies. As noted previously, neither the original nor modified CASP checklist includes numeric values with the scoring response options (Yes, No, Can't tell). Therefore our results are presented descriptively. The assessment revealed that focus groups were frequently (n=6) used to obtain data. Four structured interview and one photovoice were utilized. For data analysis, thematic approach was utilized five times. The study that employed semi-structured interview analyzed the data using grounded theory methods. Although the approaches were explicitly stated, a few studies did not fully describe the methodology. For example, two studies did not indicate a clear research aim, and the aims were not appropriate for the research in four studies; the methods were inappropriate in one study; and data analysis was not sufficiently rigorous in four studies. Half of the studies reported a relationship between the research and the participants. Eight studies had a clear statement about findings, and four did not have any statement.

Table 3 Critical Assessment of the Qualitative Studies (Programme, 2002)

Screening Questions	Yes	No	Cannot tell
Was there a clear statement of the aims of the research?	10	0	2
Is a qualitative methodology appropriate?	11	1	0
Was the research design appropriate to address the aims of the research?	8	0	4
Was the recruitment strategy appropriate to the aims of the research?	11	1	0
Was the data collected in a way that addressed the research issue?	11	1	0
Was the data analysis sufficiently rigorous?	8	0	4
Is there a clear statement of findings?	8	4	0
Has the relationship between researcher and participants been adequately considered?	6	0	6

Notes: Fifteen qualitative articles (n=15) were included.

Quality Assessment for Quantitative Studies

Twenty-three quantitative studies were identified and were evaluated using the MQS. Scores ranged from 0 to 7 (M=3.60 SD=3.24). Nearly two-thirds (65.2%; n=15) of the studies used cross-sectional design, four used experimental design, one was a longitudinal study, and three did not indicate the design. Most studies had relatively large sample sizes; Ten studies (43.5%) had a sample size above 300; eight (34.8%) had samples above 100 but less than 300; and six had sample sizes below 100.

Regarding data analysis, most of the studies utilized either regression, bivariate, or covariance statistics. Only five studies employed more advanced statistics such as mixed models, and 2 reported descriptive statistics. Thirty-nine percent of the studies did not include control variables. Interventions that included control variables focused on cooking demonstration using recipe and measurement, enrolled children, were set in schools and homes, and had large sample sizes. Most studies did not report data

reliability or validity testing. Of all the quantitative papers, sixteen (42.1%) did not report reliability testing and sixteen studies did not report validity testing. Three of the studies documented both reliability and validity tests.

Table 4 Critical Assessment of the Quantitative Studies n= (22)

Methodology	Description	Score	# of studies	Percentage %
Study design	Experimental study (e.g., randomized control trial)	4	5	13
	Case-control study	3	0	0
	Longitudinal study	2	1	3
	Cross-sectional study	1	15	39
	Did not indicate	0	3	8
Sample size	Large (>300)	3	10	26
	Medium (>100 and <300)	2	8	21
	Small (<100)	1	6	16
Data analysis	More advanced statistics (e.g., mixed models)	4	4	11
	Regression/analysis of covariance, Bivariate statistics (e.g., ANOVA, Pearson r, t test)	3	18	47
	Descriptive only (e.g., frequency)	1	2	5
Control variable(s)	Included	1	5	13
	Not included	0	19	50
Data reliability testing	Reported results	1	7	18
	Not reported	0	16	42
Data validity testing	Reported results	1	7	18
	Not reported	0	16	42

Notes: Table was adapted from Lu, Wenhua, McKyer, E Lisako J, Lee, Chanam, Goodson, Patricia, Ory, Marcia G, & Wang, Suojin. (2014). Perceived barriers to children's active commuting to school: a systematic review of empirical, methodological and theoretical evidence. *The international journal of behavioral nutrition and physical activity*, 11(1), 140-140.

DISCUSSIONS

This systematic literature review summarized existing literature and identified any gaps that may impact or enlighten future research pertaining to food preparation literacy among children and adolescents. No other systematic literature review for the period 2005 to 2015 was discovered that explores factors related to children's and adolescents' food preparation literacy. Only one systematic literature review examined child cooking programs for children and their association with children's food related preferences, attitudes, and behaviors (Hersch, Perdue, Ambroz, & Boucher, 2014). Those authors found eight studies that met their inclusion criteria for cooking education intervention for children age 5- to 12-years-old. This dissertation goes beyond the previous review by identifying numerous issues that may be affecting research and practices related to food preparation and intake. For example, this study explored how food preparation is operationalized and conceptualized in the literature; reported sample sizes; and included qualitative, quantitative, and mixed methods articles. The concerns are detailed below according to publication characteristics, food preparation literacy, and methodology.

Publication Characteristics

The analysis revealed that food preparation literacy research is being conducted worldwide. Seventy-nine percent the reviewed articles were published in the US, Canada, and Germany. The data revealed that multiple articles were published by the same lead authors and co-authors, in the same journals, and were parts of the same studies (Möser, 2010; Möser et al., 2012; Pettinger.,2006). While publications are

important to have, co-authors publishing sections of the same data set in different journals can impose some biases in the existing literature. According to the International Committee Medical Journal Editors, overlapping or duplication of any data is not only unethical, but can cause potential problems and mistrust in the body of literature. While it is understood that many data sets are large, researchers will need to be transparent about the data and methods.

In addition, publication bias is defined as selecting studies based on negative or positive characteristics and publishing a study more than once with rotating authors (Rothstein, Sutton, & Borenstein, 2006). These biases can be found in different scientific disciplines that or either qualitative and quantitative studies. Many studies have investigated the prevalence of publication bias and find that this practice is greater in large data sets compared to small studies (Ioannidis & Trikalinos, 2007; Tramèr, Reynolds, Moore, & McQuay, 1997). This practice can misrepresent the body of literature and prevent effective conclusion being drawn (Tramèr et al., 1997).

More research is needed from different countries and research teams to provide wider perspectives on food preparation literacy among children. Given that chronic diet-related diseases remain a global public health challenge and are highly correlated with food consumption, more research should include food preparation literacy among children and adolescents. Although many interventions attempted to tackle obesity by promoting healthy eating habits through education, few explored aspects of food preparation literacy such as meal planning and measurement of ingredients.

Another issue that emerged from the data was poor reporting of research settings. Several of the studies were not explicit about where the research was conducted. Only two of the 38 articles in the review indicated the studies were set in rural areas; seven studies were conducted in suburban areas; and the other articles did not specify research setting. Since epidemiologic studies indicate that obesity and obesity-related diseases are high among children in rural areas (Ogden, Carroll, Kit, & Flegal, 2014), explicitly reporting study locations will contextualize findings and make it easier for other researchers to build on what has already been done.

Food Preparation Literacy Issues

Although there are limited studies that investigate food preparation literacy in general, the present study revealed various aspects of food preparation literacy such as meal planning, food preparation, cooking skills, ingredients usages, and recipe development are being explored. This study identified several articles that evaluated cooking skills with children-parents dyads. What was not well documented in the literature was the extent to which basic cooking skills (e.g., measuring ingredients and using recipes) was examined. Indeed, only three studies were found that explored ingredients and recipe use among children and adolescents (Chen et al., 2014; Morin et al., 2013; Van der Horst et al., 2014).

Globally, literature shows that home prepared meals are decreasing while fast food consumption has increased exponentially (Popkin, Adair, & Ng, 2012). Limited confidence to prepare home cooked meals is a major barrier to families cooking (Soliah, Walter, & Jones, 2012; Stead et al., 2004). The lack of basic food preparation literacy or

intervention may also be contributing to the reduction in home cooked foods. To address these issues, adolescents should be engaged in shopping for groceries, reading food labels and measuring ingredients. Moreover, for the general public to meet the recommendations set out in Healthy People 2020, it would be meaningful to introduce food preparation either at school or in community programs. In addition, if meals are prepared with incorrect ingredients, they will have an inconsistent texture and unappealing taste (Ueda & Nakajima, 2015). Consequently, children may be more likely to consume fast foods that are high in fats, and sugars (Farris et al., 2015). It may be beneficial to teach children and adolescents the basic components of food preparation. More study is needed to identify the best strategies to build competence in basic food preparation techniques such as reading recipes, measuring ingredients, and assembling foods to make a complete meal.

Previous literature suggests parents are the best role models for their children (Christiansen, Qureshi, Schaible, Park, & Gittelsohn, 2013; Tibbs et al., 2001). The findings of this review highlight that parents and children are engaged in aspects of FPL interventions; however, only one study indicated including father and child. All the others were mother-child dyads or the parent(s)' gender was not identified. Since single parent families are associated with limited food preparation skills, we have two recommendations: 1) explicitly describe study participants, and 2) more study is needed to understand how fathers engage children in food preparation at home.

Methodological Concerns

Overall, both the qualitative and quantitative methodological quality assessment highlighted some concerns with the studies reviewed. First, there were inconsistencies regarding food preparation literacy. Only three studies incorporated all the components of food preparations: a) planning, b) getting ingredients, c) cooking, and d) tasting. None of these studies clearly explained what food preparation was or why it was important to the particular group studied.

The qualitative studies assessed parents' attitudes and behaviors regarding certain aspects of home prepared meals. None of the reviewed studies included the researchers' philosophical assumption regarding food preparation literacy. Qualitative experts have suggested that the declaration of philosophical assumption highlights any biases pertaining to the topic (Creswell, 2012). This is important in qualitative research because the researcher is the instrument for data collection and analysis in most cases. Reporting these assumptions provides a general perspective of the researcher's background, and ethical considerations between the researcher and participants can be better understood.

Another issue with the qualitative methodologies was the use of data collection strategies. All the studies used focus groups, except for two: one study utilized semi-structured interview and the other used photovoice. The studies that included focus group and photo elicitation used a thematic approach for data analysis, and the study that used semi-structured interviews utilized grounded theory. Since the choice of qualitative approaches should be determined by the research question, it would be interesting to see

more research on food preparation literacy that is shaped by photovoice and semi-structured interviews.

For the quantitative studies, cross-sectional design with regression analysis was often used. In addition, the studies reported that convenience sampling was used to identify participants. Two studies used randomized experimental design. Although cross-sectional design and convenience sampling are widely used in the literature, randomized and experimental designs are the most rigorous processes in research; therefore, future research may need to focus on randomizing participants. Also, the use of valid and reliable data collection instruments will be necessary to move rigorous research for food preparation forward.

Strengths and Limitations

Like all other research, this study possesses some strengths and limitations that need to be reported. First, the study included both qualitative and quantitative studies that explored food preparation literacy from the perspective of adolescents' engagement either at school, home, or in the community. The nature of the study helps to quantify empirical studies and identify considerable gaps in the literature that may inhibit future research. Second, the search was carried out using three databases and key food preparation terms, and included only journals published in English. As a result, some publication bias may exist as articles published in other languages and through other databases were not taken into account.

Implication for Future Research

This study identifies many gaps in the conceptualization of food preparation literacy and weaknesses in methodology; therefore, educating children remains a concern. Dietitians, public health nutritionists, and health educators -- particularly those working in the communities -- may need to collaborate to develop and implement food preparation programs that are theory-driven. The programs should incorporate nutrition education and food demonstrations that emphasize measuring ingredients, using recipes, and reading food labels. Using ingredients requires some literacy in numbers and formulas and confidence in the recipe. Also, consideration should be given to grocery shopping and utensil cleaning as these skills may increase food safety and lead to more involvement in food preparation. Teaching innovative grocery shopping strategies can make it quicker for households with single parents to prepare food.

CONCLUSIONS

Food preparation literacy is important to health outcomes. This study identifies how food preparation is conceptualized and operationalized in the literature. Since diet-related diseases are a priority for public health, it is essential to engage in conversation on food preparation literacy and approaches to target the homes of adolescents and their families. Dietitians and public health professionals may be able to capitalize on the empirical issues in this study about food preparation literacy among children and adolescents. Future research should use theory to design and implement interventions that include all the components of food preparation.

CHAPTER III

PHOTOVOICE GROUNDED THEORY: ADOLESCENTS' FAMILY HOME FOOD PREPARATION EXPERIENCES AND PERCEPTIONS

INTRODUCTION

Food preparation literacy, or FPL, is defined as a person's ability to plan, manage, and prepare tasty food items or dishes with limited directions (Vidgen & Gallegos, 2014). Food preparation literacy is not compulsory in the USA schools; yet home meal preparation is consistently recommended as a method to improve the diet and overall health of adolescents (WHO 2003; People, Health, & Services, 2000; Van der Horst et al., 2014). In 2010, the United States Department of Health and Human Services established goals and objectives to improve health outcomes over the next decade. One of the primary initiatives was to reduce overweight and obesity through nutrition education, access to healthy foods, and change in eating behavior (People et al., 2000). Present literature indicates that over the last 20 years, many families in the USA and other developed countries have shifted from home-prepared meals to consuming convenient and fast food restaurant meals (Smith et al., 2013). The National Food Consumption Survey reported that the average American family consumes their meals away from home at least three times per week (Kant & Graubard, 2004). Research reveals that, on average, more than 50% of family income is spent on eating away from home (McCrory et al., 1999; Thompson et al., 2004). These meals are more likely to contain high calories, high fats, and low nutrients (Nielsen & Popkin, 2004; WHO, 2003).

Foods prepared at home are usually healthier, yet families still choose to consume foods away from home. However, it should be noted that home meal preparation is multifaceted and requires several sequential steps such as planning, obtaining food items, preparing meals, serving the finished product, and eating the meals prepared (Simmons & Chapman, 2012; Thomas & Irwin, 2011).

Family food environments and societal changes have been noted as contributing to the change in where families get their meals. For example, recent studies documented that convenient foods have become more accessible to adolescents compared to home cooked meals. It is argued that this could be a result of increased numbers of single parents and both members of co-head families working away from home (Macario, Emmons, Sorensen, Hunt, & Rudd, 1998; Neumark-Sztainer, Story, Perry, & Casey, 1999; Wrieden et al., 2007). Other research suggests that limited time and lack of food preparation knowledge and skills contribute to the low amount of home prepared meals (Slusser et al., 2011). Recently, McWhinney and colleagues (2011) reported that parents allowed children to make eating decisions, and this was mainly due to economic constraints and to compensate for loss of quality parenting time (Whinney, McDonald, Outley, & McKeyer, 2009).

Food Preparation Literacy

While all the above factors contribute to a decrease in the rates of home prepared meals, prevention strategies hinge on increasing nutrition knowledge to reduce diet-related diseases, specifically obesity (WHO, 2003). Evidence in the literature on adolescents' participation in food preparation activities are poorly explored (Hebert &

Jacobson, 1991; Simmons & Chapman, 2012). Many researchers have investigated cooking skills, but basic techniques for functional food literacy such as shopping for grocery, menu planning, ingredients selection, and recipe usage have received little attention (Chen et al., 2014; Simmons & Chapman, 2012). Previous studies have focused primarily on cooking skills and cultural traditions, time, family structure, obesity, and parents stress levels and its' association with preparing daily home cooked meals (Flora & Gillespie, 2009; McIntosh et al., 2010; McLaughlin, Tarasuk, & Kreiger, 2003; Woodruff & Kirby, 2013). Only a few studies have measured cooking skills with focus on adolescents (Gatto et al., 2012; Noradilah & Zahara, 2012; Townsend et al., 2006).

As stated earlier, cooking skills are a small aspect of the overall component of food preparation literacy, as there are other important aspects (e.g., menu planning, selecting and securing ingredients). Relatively no studies have concentrated on adolescents' ability to distinguish between these different aspects of food preparation.

Importance of Adolescents in Food Preparation Research

Adolescence is a period when cultural norms such as eating practices and independence are further developed. During these years, poor dietary practices can affect overall health and well-being. However, adolescents' ability to accumulate knowledge regarding food preparation not to be an intentionally taught skill at home or school.

Current literature suggests low fruit and vegetable consumption among young children and adolescents is associated with poor cooking skills (Baranowski et al., 2000). In addition, most intervention programs target simple meal preparation skills rather than complex food preparation skills (Robinson-O'Brien, Story, & Heim, 2009; Seeley, Wu,

& Caraher, 2010). The characteristics of complex meal preparation includes planning, organizing, cooking and serving foods (WHO, 2001, 2003). Simple meal preparation involves planning, organizing, serving, but no cooking from scratch. Previous research indicates that adolescents' involvement in food preparation increases the chance of eating healthy later in life (Anderson et al., 2002; Condrasky, Griffin, Catalano, & Clark, 2010; Larson, Story, et al., 2006). Conversely, adolescents who grew up on processed or ready prepared foods may experience challenges in understanding techniques of food preparation in adulthood (Allman-Farinelli, 2015; Holm & Kildevang, 1996)

According to social learning theory, children learn most from demonstration and constant reinforcement (Bandura & McClelland, 1977). Parents are the primary gatekeepers for promoting home prepared food and for modeling healthful eating behaviors (Kirschenbaum, Germann, & Rich, 2005). Parents introduce cultural norms and teach interdependence that can sustain healthy lifestyle practices. As many parents spend the majority of their time away from home working and children spend a large majority of their day in school, there is limited time to incorporate food preparation into the daily home schedule. Single parents' homes are even more challenged to fulfill parental roles and teach daily chores. While these barriers exist, positive parent and child interaction during food preparation is critical to achieve food preparation skills. Parental desire to follow dietary guidelines and recommendations is well documented, but parents' ability to shape their children's food preparation skills may be limited. Thus, lifestyles may serve to restrict the acquisition of food preparation skills. Since food

preparation literacy is not a part of the curriculum in most schools, parental or home instruction is likely the only way for adolescents to learn these skills.

The purpose of the study was to assess adolescents' family food preparation skills and discuss strategies used to teach food preparation in adolescents' homes. This study seeks to answer the following research questions:

1. How are food preparation skills taught in the homes of adolescents?
2. How do parents describe their foundation of their food preparation skills?
3. How do adolescents perceive their cooking experiences?

METHODS

The design of this study incorporated photovoice and grounded theory. Photovoice is a form of participatory action research (PAR) in which participants use cameras to record their perception about a topic (Wang, Yi, Tao, & Carovano, 1998). The process involves taking a sequence of pictures that create critical dialogues and reflections of past and present phenomena (Wang et al., 1998). Photovoice has been used with underserved populations, and to understand health and social issues (Lardeau, Healey, & Ford, 2011; Neill, Leipert, Garcia, & Kloseck, 2011). Recently, the photovoice approach has had positive influence on nutrition and dietetics policy (Martin, Garcia, & Leipert, 2010).

Grounded theory methodologies explore common experiences about a phenomenon and generate theory based on participants' perceptions. Glaser and Strauss (1967) developed this rigorous research technique to ensure data are analyzed through a

systematic process and that results are grounded within the data. Grounded theory provides the necessary principles to guide data collection and analysis, as introduces a framework through which important themes and theory may emerge.

Grounded theory methodologists have offered a constructive and interpretive perspective to this qualitative approach (e.g. Chamaz, 2006). These methodologists suggest declaring a philosophical assumption. This process helps to provide an epistemological foundation for the research and articulates the importance of the study to the researcher. Adopting this perspective, I approached this study from a social constructivist paradigm.

The social constructivist places special emphasis on participants' understanding and ability to learn through interaction (Creswell, 2012; Palincsar, 2005). I am a trained nutritionist with several years of instructional experience in college settings. Also, I have been actively engaged in community-based research that explores factors influencing food choices among rural, low-income, underserved families. My constant interactions with students, their families, and my research experiences have taught me that knowledge and societal norms have a great influence on people's responses to nutrition and food choices.

As I embrace the social constructivist paradigm and interpretations, I bracketed my prior assumptions and approached the research with an open-mind about food preparation literacy in rural adolescents' homes.

Study Settings

This study was conducted in Waller County, Texas. Waller County is about 518 square miles and comprises six cities. According to the U.S. Census Bureau (2014), the county has approximately 46,820 residents. The racial/ethnic composition are as follows: African American (25.8%), Hispanic (29.5%), White (50%), and other (5%). More than 33% of the households are headed by single parents and have children below 18 years old. Eighteen percent of the residents live below the US poverty level. The average family income is \$46,313.

Recently, the Robert Wood Johnson Foundation Program on County Health Ranking and Roadmaps compared Waller County demographic, health outcomes, health behavior, healthcare, and social economic factors with statewide data for Texas. Of 237 counties, Waller County was ranked as follow: overall health - 140, health behaviors - 110, clinical care - 161, social economic factors – 125, and physical environment - 199. High numbers are indicators of low quality. Waller County has a history of poor health outcomes, especially among children. Sixteen percent (16%) of children were uninsured compared to the state's level (31%), and 19% were classified as being food insecure (Bureau, 2010). The county has three independent school districts with more than 60% of students on free or reduced lunch.

Recruitment

Using a purposive sampling design, participants, were recruited through flyers published in English and posted at local grocery stores, gas stations, and apartment recreational centers throughout the county. Families had to meet the following criteria to

be eligible: 1) be a resident in Waller County, Texas; 2) have at least one child between the ages of 13- and 19-years-old; 3) cook at home at least once per week; 4) parents had to be at least 20 years old; and 5) speak English. Interested parents contacted the project investigators via telephone, and after a preliminary screening to ensure eligibility, an initial meeting place and time were scheduled. All eligible participants were entered in a drawing to win a digital camera that cost approximately \$50.00. This project was approved by Texas A&M University Institutional Review Board (IRB).

Procedures

Initial Interview. Data were collected during two meetings: an initial and a final meeting. The initial meetings were scheduled according to participants' availability and occurred at a convenient place of their choice. During the meeting, parents and children were provided with the project aim and objectives, a copy of the informed consent, and a demographic questionnaire that was used to fully assess eligibility (see Appendix). Families who were eligible received a digital camera and participated in a 10-minute training session on its operation. The researcher obtained consent signatures and answered participants' questions.

Each family was instructed to take pictures of what they considered to be food preparation in their home and return the cameras in two weeks. No limit was set on the number of pictures they could take.

Final Meeting. After two weeks, a second and final meeting was held at the participants' home or workplace. The final meeting included two data collection sessions: the adolescents' photo elicitation and parents' semi-structured interviews that

lasted approximately 30-45 minutes each. The photo elicitation sessions were conducted after school at the parent's workplace or in their home. Interviews conducted in the home were held after 7:30 p.m., while interviews held at the workplace were held after 6:30 p.m.

Table 5 Second Meeting Schedule for Parents and Adolescents Interview

Time	Activities
5-7 min	Introduced outline and Activities
7 min	Parents were separated from children
8-12 min	Start of photo elicitations and selection of picture
14-55	Discussion of picture events
1 hrs.	Closing of adolescents interview session
1 -1.5 hrs.	Interviews with parents
1.5-1.45hrs.	Interviews adjourned

Adolescents' Interview. The adolescents' interviews started in the presence of at least one parent. The researcher presented a brief introduction and outline of the evening's activities. All participants were given opportunities to ask question and clarify any uncertainties. The introduction section lasted for an average of seven minutes. Once all questions were answered, the parent was separated from the adolescent. Parents remained within the interview environment, but outside of earshot so as to provide privacy for the adolescents' portion of the interview.

The interview settings for both home and workplace were similar. In the homes, the adolescent and investigator sat parallel to each other. This occurred most often in the family dining room, and facing a computer. This allowed for easy selection of photos for discussion. At the workplace, the sessions were conducted in a small conference rooms

around tables. These interviews lasted approximately 10 minutes (see table 5). The average number of photographs obtained from each family was 20.

Once the adolescents were comfortable with the photos selected, the session began with Wang (1998) SHOWed methods for photovoice analysis. This included selecting the photograph, storytelling, coding and identifying emerging themes (Wang & Burris, 1997). Specific questions were developed to help the participants with critical thinking and the researcher with framing the storyline. Sample questions were

1. What was happening in this picture?
2. What was your experience conducting this task?
3. How does this make you feel?
4. Why is this important to you?

Additional questions were asked whenever necessary to get in-depth understanding of the adolescents' descriptions and interpretations of each photograph. The sessions ended with a closing question and an expression of gratitude from the researcher.

Parents' Interview. The semi-structured interview with parents sought to gain in-depth understanding of their perceptions regarding their own home food preparation skills, their childhood experiences, and the learning strategies they use (if applicable) to engage their children. The interview guide included 10 questions developed through the literature review and researcher expertise. The questions were pilot tested by graduate students enrolled in a grounded theory methodology course at Texas A&M University. The first question gathered information about daily food preparation practices at home

and served to build a rapport between the researcher and participants. Questions 2-9 explored family cooking history, parents' attitude toward teaching children at home, and their perceptions toward cooking programs/ classes in their community. The final question (#10) provided participants with an opportunity to add any information that was not covered in the interview (see table 6).

Table 6 Semi-structured Interview Guide.

-
1. What are the kinds of foods prepared at home?
 2. Tell me about your cooking skills
 3. Tell me how you learned to cook your meals.
 4. What are some of the barriers you face while cooking with children?
 5. Think back at your youthful days of cooking, what was the most interesting thing you did that you liked about cooking?
 6. What are some of the things you can see that's affecting youths cooking skills today?
 7. If cooking should be taught in school, what would you suggest for children?
 8. Tell me about your food preparation skills before having children.
 9. Can you think of any program in your community that helps with cooking or food preparation skills?
 10. Do you have any concerns or anything to add to the discussion that I did not mention?
-

Additionally, questions were asked when necessary to understand any concepts that were unclear. Both adolescents' and parents' interview sessions were digitally audio recorded. Observations of facial expressions and reactions to questions were documented during both adolescents' and parents' interviews. For example, during all of the semi-structured interviews, parents' reflections on grandparents' food preparation skills or teaching stimulated laughter and excitement.

Field notes were written immediately after the sessions in the researcher's car before driving home. The researcher documented issues identified in the photographs related to food preparation in the home. A total of four pages of analytical notes and conceptual reflections were recorded. Extensive written memos described the analytical process at each step and emerging patterns and themes.

Data Analysis

The digitally recorded parents' and adolescents' data were transcribed verbatim immediately after each interview. The researcher listened to the audio recordings and compared them with the typed transcripts to determine accuracy as well as to gain a comprehensive understanding of the adolescents' and parents' beliefs. The data analysis followed Strauss & Corbin (1990) constant comparative methods to systematically compare meaning and to identify similarities and differences. This means data collection and analysis occurred simultaneously and all newly collected data (e.g., pictures, interviews, observation, field notes, and memos) were compared with data already collected for the study.

During data analysis, no differentiation was made between sources. Line by line open coding procedures were completed by hand, then transcripts were uploaded into ATLAS Ti (version 7). The software was used to manage emerging open codes and organize open codes into categories. The demographic data were entered into Microsoft Excel and analyzed for frequency.

In grounded theory, as discussed by Strauss & Corbin (1990), the emergence of theory occurs through four stages. The stages are open coding, axial coding, and

selective coding and conditional matrix. Open coding consists of internal codes, data collection process, and conceptualizing codes into categories. During this step for the present study, the data were broken apart to understand adolescents' experiences and food preparation skills, and to explore how parents engage their adolescents in food preparation at home.

The open codes were collapsed into categories according to functions and similarities. Each category was assigned properties and dimensions. Properties define the characteristics of the categories and dimensions explain how these properties vary (Anselm & Corbin, 1998). For example, "time" emerged during data analysis as a category. Most participants spoke of time in the context of events in their lives. Thus, the property assigned to time was "any period of an occurrence" and the dimensions were "past time versus present time." Table 7 illustrates selected examples of categories, properties, and dimensions that emerged from the data on food preparation in the home.

Following this step and data saturation, axial coding was undertaken by making connections between categories. This process illuminated the central category. According to Strauss and Corbin (1998), the central category has the potential to pull together all categories to represent an explanation of the entire story. The interpretation continued until selective coding was reached.

In selective coding, open and axial codes were systematically related to the central category and to other categories. Strauss & Corbin's (1990) coding paradigm that includes cause, context, action /interaction, and consequences was used to integrate the axial codes and the central category or phenomenon.

Table 7 Open and Axial Coding Categories with Properties and Dimensions

Categories & Open codes	Properties	Dimension	Quotes
Time	The period of an occurrence	Past versus Present	Ever since Yvonne was born, you know I cook nothing but healthy things for her I always make sure that she has a balanced meal every evening.
Weekday Giving birth Holiday/season Age Change to parenting role			The transition from grandma to you know college it just, it wasn't the same of course. It was a learning process, but I had some of the recipes so I would use those to fix food, (chuckles) because if I wanted her dressing and you know made,
Families		Past & Present	
Grandparents Mother Brother Spouse/ Ex-husband	People living together		I learn from my grandfather and my mother, so I do I love to cook. Some days I'm tired, but most times I like to try different things.
			When my brothers tasted the food they always tell me how good it taste.
Emotions		Negative versus Positive	
I love It takes the stress away Good bonding time	Any type of feelings		I love cooking, because they would inveigle me to cook, because sometimes they would say I love you're cooking.
			Cooking makes me feel good, it takes the stress away and I want to be a chef one day so I have to start from a very young age.

Table 7 Continued

Categories & Open codes	Properties	Dimension	Quotes
Food Preparation	Activities	Pre-packaged versus not pre-packaged	I think if people would cook more from scratch they would appreciate what they eat more than pulling something out that has already been made and popping it in the microwave like we do every day.
Cooking from scratch			
Using recipes			
Pre cooked			
Measuring			
Washing			
Teaching Learning			
Keep telling	Strategies	Formal	I did I learned by watching him, watching the ingredients
Watching	used to	versus	that he would put in there or I ask questions why do you
Teaching myself	transmit/ receive	informal	put this in there or why do you do this.
Learning	cooking		The cooking skills I actually taught myself through the years,
Ask questions	information		I'm a Cajun cook.
Location			
School	Anywhere	Inside	Well, when I was young I was always in the kitchen looking
Home	teaching or	versus	what my mom would be doing and at a certain age at school I
Kitchen	cooking activity takes place	outside the home	went to the home economic center. So it's a mix from my mom and from school.
Feedback Resources	Any	Positive	Feedback is very important, you know. Anytime you cook
I thank him	response to	versus	something or come up with a new kind of recipe.
Technology	cooking or	negative	
(computer)	eating		Most children will go like "oooh I don't want that, I don't want that" they just don't like the way it looks. But if you get them to taste just a little tiny bit, if you can finally get them to try it. Most of the time they will like it. I leaned for the TV and computers and no one to teach them how to cook.

Trustworthiness and Confidentiality

Trustworthiness and confidentiality were maintained throughout this study. Trustworthiness strategies included triangulation and credibility. According to Lincoln and Guba (1985), triangulation is a key responsibility of the researcher in qualitative study. This study utilized four data sources: pictures, memos, interviews, and observations. With respect to credibility, digital recordings captured all information during the interviews. In addition, reading and rereading of transcripts allowed for careful analysis of data. Confidentiality was maintained by assigning each photograph a code instead of names or captions in order to protect the identities of the participants. Families were also assigned nondescript labels (Family 1, Family 2, Family 3, Family 4), and participants were given fictitious names: Yvonne, Kevin, Kerisha, Kerry, Madge, Louise, Martha, and Victoria.

RESULTS

Demographic Characteristics of Adolescents and Parents

The following information was obtained from the demographic instrument and semi-structured interviews of four different adolescents' families. The families self-identified as White (n=1) and Black (n=3). Household incomes ranged from \$0-\$50,000, with 2 to 6 members living in each household. All parents were older than 20 years and adolescents were 13 years-old (Yvonne), 14 years-old (Kerisha and Kevin), and 16 years-old (Kerry). All participants had resided in the county in excess of 10 years.

Family 1

Madge is Yvonne's mother and they reside in the same household. The family moved to the county fifteen years ago from another state. They identified themselves as whites with a family income in the range \$0 to \$10,000. Madge is a single mother who relies on monthly food stamp supplementation. She has a 9-12th grade education and learned to cook at age 10 years. Yvonne is 13 years-old and attends junior high school. She explained that she began helping with food preparation at age five years old. From what she could recall, her initiation with food preparation began with her mother allowing Yvonne to wash and pack dishes. Yvonne's actual cooking experience began with making popcorn in the microwave.

Family 2

Family 2 consists of 6 members with a total family income in the \$10,000 to \$20,000 range. The household is comprised of Grandmother Louise, grandson Kevin, two adult daughters, one son in college and one granddaughter in college. Both college students commute to school daily. Louise has a 9th grade education. She does all the shopping and food preparation, and is the primary cook in the household. She also works fulltime and functions as the primary breadwinner, as her two daughters are not employed and her son attends college. The family immigrated to the U.S. and settled in the county ten years ago. They self-identify as Black.

Kevin is 14 years-old and the youngest in the household. He was introduced to meal preparation at age 10 years by his grandmother. Kevin described his first meal

preparation as very exciting. He recalled frying eggs and preparing toast for the entire family one morning before school. Kevin wants to pursue a career as a chef.

Family 3

Family 3 has an annual family income between \$40,000 and \$50,000. They self-identified as Black. The household consists of 14 year-old Kerisha, her mother Martha, and a sister who lives at home and attend college. Martha is a divorced single mother employed full-time in the education system. She is the primary cook in the family. The family has been residing in the county for almost 17 years. Martha started involving her children in food preparation when they were about eight years old. She began by teaching her children how to manipulate the microwave and by cooking ramen noodles.

Family 4

Family 4 consists of 16 year-old Kerry; mother, Victoria; brother; and dad, who works away from home. The family income is in the \$40,000 to \$50,000 range per year. They self-identified their race as Black. Kerry and Victoria alternate cooking responsibility during the week, with Kerry undertaking dinner on Tuesdays and Thursdays. The other days are Victoria's responsibility. Victoria started engaging Kerry in meal preparation before Kerry was nine years old. At age nine, Kerry made her first meal a salad.

Interview Findings

A total of 84 photos were received from the adolescents; however, they selected only 21 pictures for discussion. Some participants selected only a few photos, and for various reasons (e.g., uncomfortable with photo topic, poor quality photo). The photo

elicitation purpose was to capture what families perceived as food preparation. Overall, 70 pages of interview transcript produced 424 codes, which were then collapsed into 23 categories. The analyses revealed a variety of inter-related categories contributing to food preparation at home.

The following sections present findings from the axial and selective coding. The intent of this study was to understand parents' and adolescents' food preparation practices and experiences.

Axial Codes

Axial coding involved identifying relationships and connecting categories that emerged during open coding. The process was guided by step-by-step memoing and concept mapping to keep track of theoretical development.

Central Phenomenon

Learning and Teaching Strategies. Per Strauss & Corbin (1990), central phenomenon is the central idea, event, or happening specific to a set of action or interaction. For these families, the central phenomenon is learning and teaching strategies – in other words the primary reason food preparation is sustained in their homes. Overall, parents were elated to share their childhood food preparation learning experiences. They all perceived it to be an important tool for their own children. With one exception, parents identified their grandparents as the primary provider of food preparation skills. For the exceptional case, the participant indicated their biological mother and their school teacher served as their main source of instruction for food

preparation. Regardless of the source of instruction, parents indicated that those lessons helped to influence their enjoyment of cooking.

Parents shared that while learning food preparation skills from their grandparents led to the cooking experience to be enjoyable, time constraints prevented them from preparing meals daily. Martha learned to cook from her grandfather, and still enjoys the activity.

I learn from my grandfather and my mother, so I do love to cook. Some days I'm tired but most times I like to try different things (Martha).

Similarly, Victoria, who learned from her grandmother, enjoys cooking, but reported not having enough time to cook every day.

I learned to cook from my grandmother and I've enjoyed cooking. I love cooking. I just don't have the time to cook like I want to. So, if I could get home every day and cook, you know either steaks, or noodles, and we make sure we have the green vegetables. Cause we're very, you know, adamant about that and you know like I said make it into a pretty meal and I would, but I just don't have the time (Victoria).

The parents emphasized that as children, most of their learning occurred through observations, demonstrations, and asking questions. Mothers recalled they were more likely to engage in observation and questioning than in demonstrations. Two mothers described their experience of learning through observation:

I learned by watching him, watching the ingredients that he would put in there or I asked questions: "Why do you put this in there?" or "Why do you do this?"

He may have made me do some simple things, but most of the times I was just watching him. Now with my mom, I would watch her but then she would actually have me do it and she would walk me through the steps on how to prepare it: - what to put in it, what to look for, how you want it to taste (Martha).

Louise's learning experiences at home were quite similar to Martha's. She was limited to observing food preparation at home, but at school the experience including observation, demonstration, and asking questions. She perceived that both types of training equipped her to be an effective cook.

Well, when I was young I was always in the kitchen looking what my mom would be doing and at a certain age at school I went to the home economics center. So it's a mix from my mom and from school and then I did it on my own (Louise).

Mothers' shared that they use dialectic and motivational teaching to encourage their children to participate in meal preparation - specifically cooking. For example, mothers would have their child in the kitchen to observe. Mothers expressed that most times, the child was unwilling to actively engage in the experience. The mothers countered such reluctance through demonstration of affection and with encouragement. Regardless, mothers ensured the children were learning something even if limited to mere observation of the cooking process.

As a matter of fact, I always said come and look what I'm doing [in the kitchen], because you love food. And if he come in here [home from school] and see me, the first thing he would do is kiss me. "Grandma I'm hungry!" I said come, come

and look. But I don't let him really, but his main thing is to cook eggs, eggs and sausage. (Louise)

Another type of approach parents used to deliver food preparation skills at home was through demonstration and observational teaching. For this process, mothers would assign tasks to their children albeit the children sometimes refused to participate. When children refused, the mothers acquiesced and reverted to more subtle strategies. One mother described:

I don't try to trick her, but I'll ask her could you please, if I need to go to the restroom or something. I would ask her could you please stand here and stir this for me, and I'll tell her, you stir it just like this and then she's kinda apprehensive so, she'll go...I'll ask her to help and sometimes she will and sometimes she won't. She's the exact opposite. She's not into learning how to. She can do some stuff, she can fry some meat or whatever. Ok but it's not her thing (Martha)

Action /Interaction

Feedback and Resources. Feedback from the children emerged as key determinant of home food preparation, and affected how often foods were prepared and the quality of the completed meals. Parents indicated that feedback had both negative and positive impact on their emotions and ability to prepare foods. For example, two parents stated that whenever feedback was provided, it allowed them to understand what their child/children liked to eat. It also provided an opportunity to improve the meal quality and taste, especially if testing a new recipe. Parents' believed such feedback also helped motivate children involvement in meal preparation.

Feedback is very important, you know. Anytime you cook something or come up with a new kind of recipe. Most children will go like “I don’t want that, I don’t want that” they just don’t like the way it looks. But if you get them to taste just a little tiny bit, if you can finally get them to try it. Most of the time they will like it (Madge).

I’m excited, I’m, I’m happy that they like it you know that smile on their face.
(Victoria)

Conversely, whenever feedback is not provided, parents experienced a sense of disappointment. Two parents described their emotions as feeling disrespected, hurt, and sad.

It hurts my feelings, I fell disrespected. I feel like I’m not appreciated, you know, the child is like “oh mom it’s just food” but its food that you can either like or dislike, its food that your mother cooks, not out of a box, you know. Although assistance is helpful out of a can every once in a while, you know like our seasoning, our dried goods, but the most important thing is that you need that feedback in order to be able to cook decent for your children (Madge)

Resources emerged as another category, but with several subcategories. Television and computer were repeatedly discussed as learning and teaching aids for food preparation practice. One parent (Martha) stated she frequently viewed Dr. Oz television show to learn food preparation.

That I've noticed the difference between corn oil...a lot of them say corn oil or vegetable oil, but canola is supposed to be the best. I got that from Dr. Oz and a lot of other things over the years.

Victoria on the other hand, indicated that the internet was the most effective way for her to learn and teach food preparation to her kids. *"I leaned from the TV and computers and no one teach them (children) how to cook."*

Causal Conditions

Time, Family, and Emotions. Causal condition is the category that influences the central phenomenon. From our analysis, the learning and teaching strategies used to transmit food preparation skills were influenced by three primary factors: 1) time, 2) family, and 3) emotion.

Time. Throughout the interviews, participants referenced time in various ways. For example, time arose in reference to phases or transitions. Mothers spoke of time in reference to their children's appropriate age for learning food preparation skills, and their own transition from non-mother to mother role, and to cooking frequency. Mothers associated their experiences with different concepts of time. All mothers indicated they began to learn about food preparation between the ages of 10 to 12 years. Mothers clearly indicated that at that time, they were not allowed to prepare a complete meal on their own. They perceived their parents and grandparents under-estimated their ability to prepare or cook a meal. However, the mothers described feeling surprised and excited when they were finally allowed to prepare a complete meal without the presence of an adult.

Yes, Yes, I remember the first time I cook, 10 yrs. old, I surprised my mom one morning. Yes, my dad was in England so he came home late when it was night so they slept late and I woke up early. I got some green bananas, codfish and just like my momma would do it, you sauté the onions and the peppers and you cook you salt fish and pick it up and whatever your tomato and etc. and then I would normally make tea in one pot for the family so that's what I did. So when she woke up she said she was gonna fix breakfast, she was surprised at 10. She said, poppa said but sis you had help, momma said no I do not let you go to the stove because it was oil stove. And it was the first I ever cook. Then she know I could cook, she would never let me cook but I just surprise her and from that I just start cooking (Louise).

Another time concept described by mothers was the transition from non-mother to mother role. They all explained that although they had considerable knowledge about food preparation, they did not actually utilize it (i.e., cook) frequently until after the birth of their first child. One mother described this transition:

Before Kerisha, I was lazy. I lived with a Cajun for fifteen years and he and I would cook, but then over the years it would get to like where he want this and I wanted this. So we started eating out twice a week. Sometimes twice a week we'd eat out - not really eat out - we'd like get us some po-boy you know and bring it home and eat it. So we just go pick up some fast food actually and bring it home. Before Yvonne, before Yvonne was born and then I started using my skills because I started having my own place. There was nothing serious, we would

make gumbo once in a while we'll boil crawfish, fried some fish every once. Ever since Yvonne was born you know I cook nothing but healthy things for her. I always make sure that she has a balanced meal every evening (Madge).

Adolescents indicated they became involved with cooking at home between the ages 5 to 12 years old. Their learning experience started with watching, asking questions, and assisting parents with small chores. These chores included activities such as washing dishes and stirring food during the cooking process. One adolescent explained that cooking is a natural part of her daily routine. She explained that despite many other after-school obligations, she makes an effort to cook, especially healthy food options.

"I do as much as I can do. School is very, very overwhelming, so I honestly I do go in the kitchen and I'll just sit there and I'll think I should help mom, but I have a ton of homework to do. So, I go do my homework and mom will go cook a meal and I go like thanks mom and I tell her I promise I'll help you out one day. I'll go the next day or whenever I'm not busy I'll go and I'll cook a nice meal. I love cooking like fish, yea typically fish because I'm a power lifter so I have to eat healthy and I'll cook either tilapia and shrimp or noodles and asparagus, green beans, French fry and green beans"

When the adolescents were asked to reflect on their first time engaging in food preparation activities, they described their experiences different from their mothers. Adolescents discussed time with respect to experiences preparing food for the first time. In other words, the concept of time was linked to events or specific points.

Yvonne thought kitchen work was extremely challenging, but after cooking several times, she became more comfortable with the task.

“I just follow the instructions and I just let it cook and then I put in the seasoning and stuff and then when it’s done we just put it on the plate and see what we have to eat with it”

Two adolescents describes occasional mistakes. For example, Kerisha failed to time the meal while cooking, resulting in burnt dishes. As she described:

“I don’t like to cook; I usually don’t do that, because I usually end up burning food. So I try to learn more”.

Although it was a bad experience for Kerisha, it did not discourage her from continuing to cook or from learning additional food preparation skills. She coped by asking for more direction from her mother in the form of questions. Kerisha also described reading and following recipes and instructions.

Kerry, on the other hand, did not refer to recipes or instructions. For example, when learning to cook beef, she experimented with spices and seasonings and relied on her own judgment. Indeed, could not describe any official means to determine if beef was properly cooked. Instead, she used her own criteria: *“I just know that it smells good.”*

Unlike Kerry, Kevin utilized a slightly more structured approach to recipes and ingredients. He has a reputation among family members as someone who tremendously enjoys eating others’ cooking. He was challenged to learn to cook when his grandmother informed him that he would henceforth be required to cook his own food. As part of his

learning process, he observed his grandmother as she cooked, and paid particular attention to the types and variety ingredients used. He did learn, however, how to measure the ingredients. Thus his use of recipes was somewhat structured with regard to content, but he was more experimental with quantity.

“I have been thinking about it but I never tried it, one day I came from school and I tried it. It had salt, pepper and cayenne pepper”

Family. For this study, I defined family as anyone who lived in the household either presently or in the past. Participants explained that family members wield great influence on the types of food prepared at home. While parents considered themselves as great cooks, they believed other members of the household influenced the frequency and quality of the meals prepared at home. For example, one adolescent explained that when *my brothers tasted the food they always tell me how good it taste.*

Emotions. Based on the analysis, emotions were closely associated with cooking and preparing meals at home. Participants associated positive emotions (e.g., love) with cooking and preparing meals at home. For example Louise stated:

I love cooking, because they would inveigle me to cook. Sometimes they would say I love your cooking. On Saturdays, I normally buy roast beef, roast. I always cook it for mama (deceased). I would season it, wash it and clean it up. I cut up onions, pepper, thyme and salt and mix it up. I always poke that thing and stuff it with the seasoning. Then you would put it in the pot and would brown it, turn it and brown it and brown it, Yeah.

Although parents associated positive feelings to home prepared meals, adolescents had different views. Adolescents appeared to be comfortable cooking and preparing meals at home, but frequently were fatigued by the experience. They described several factors that were not positively associated with the experience. For example, cooking resulted in high and uncomfortable temperatures in the kitchen. The need to remain standing for extended periods of time around a hot stove also contributed to their discomfort.

While discomfort and fatigue commensurate with cooking was perceived as unavoidable, none of the adolescents indicated it influenced how often they involved themselves in cooking at home. Instead, the adolescents were able to capitalize on the experience, and used their fatigue as an excuse to sleep and/or rest. As Yvonne explained: *“Yea that was me in the bed. I got very tired of cooking all day long. One I was hot, two my bedroom was cold, three I got freeze out and had to put the blanket on me.”*

Increases in parent-adolescent bonding time emerged as another outcome of parents utilizing teaching strategies for home prepared meals. In general, all the adolescent participants agreed that home prepared meals facilitated bonding among family members, specifically with their parents. Three female adolescents mentioned that cooking at home increased the time they spent with their respective mothers, as well as the quality of the interactions. Adolescents reported the time was spent recapping daily activities, promoted laughter, and improved family interaction.

“With mom, its good bonding time and it’s just like we talk about our day, laugh about things you know. I think one time, I don’t know how it came up, but I order hot wings (laughter) and I put it in the freezer because I wanted it to cool off and so it’s just like it brings back memories. I never knew about that until she told me, she was like laughing for fifteen minutes straight (laughter). Hey, I was just trying to be creative, but it is just even after a stressful day, I just don’t like seeing her mad or anything. So just seeing her laugh makes me feel good and just being in the kitchen helping her out like just lets me know that hey things are going good and I’m ok I just keep on going so, yea.”

Adolescents differed in their perception of the emotional value of preparing meals with their parents. Female adolescents indicated that shared cooking activities facilitated enjoyable exchanges (e.g., laughter, light talk) which help them understand their parents’ emotions, as well as provided a way to communicate positively with their mothers. Further, it fostered feelings of commitment to their parents, and these feelings were enhanced when adolescents and parents ate the meals they prepared together.

Not all adolescent perceived parent-adolescent joint meal preparation to be a bonding experience. Nevertheless, there were other positive outcomes to the practice. For example, Kevin reported feeling stressed from school. In his case, he thoroughly enjoyed cooking because it made him feel good and functioned as a stress-reliever.

“Cooking makes me feel good, it takes the stress away and I want to be a chef one day so I have to start from a very young age”.

Context

Locations to Improve Teaching /Learning. Locations as a context, is defined as places in which teaching/ learning occurred. During parents' discussions of the physical contexts (i.e., places) for teaching and learning food preparation, they raised concerns about the lack of facilities and opportunities to expand/improve their cooking skills. Madge, Martha, and Victoria shared that their children participated in a weekly after-school food preparation programs. Yet they revealed little knowledge of the breadth or depth of the curriculum.

“I know my daughter tells me in the ACE program, after school program, they do have cooking, because they taught her how to make rice cripes in school.

In general, all participants believed that regular availability of a local cooking course would serve to promote cooking at home, and that it would be particularly effective for families who lacked basic meal preparation knowledge and skills.

No! I've been here ten years now and I have not heard of anything anywhere that teach cooking. They talk about summer programs where schools cook or churches cook for people to come eat... It would be harder for the schools to understand all the cooking and preparations but I think children would benefit better from it. They would get a better nutrition you know... not all these preservatives.

Consequences

Increased Home Meal Preparation Literacy. In this study, consequences were defined by participants as the positive end-result (i.e., outcome) of successfully transference of food preparation literacy. Cooking from scratch (i.e., starting with the most basic form of ingredients) was the most frequently mentioned outcome. Families in this study prepared their meals from scratch at least twice per week. Parents made it explicit that whether or not they were present, the adolescents were able to prepare meals from scratch without little or no assistance. Figure 2 provides some selective pictures with quotes of the food prepared.

Participants discussed three positive benefits of cooking from scratch. First, they believed that cooking from scratch helped to encourage the use of a variety of ingredients. For example, Madge stated “*I like making things from scratch, because you always know what’s going in there.*” Louise shared similar views, but emphasized that:

I think if people would cook more from scratch they would appreciate what they eat more than pulling something out that has already been made and popping it in the microwave like we do every day. I mean there is not one day a person can go about without using a microwave. I mean think about it everybody practically lives off a microwave and if you don’t have one people will look at you like you’re crazy.

Families also believed home-made meals increased the likelihood of families eating meals together and at home. Yet, while participants indicated they cooked from scratch, none of the photos captured families eating meals together or engaging in the meal assembly process. The photos presented were of complete meals – fully prepared and on plates ready to be served. The exception was of an individual who was photographed stirring vegetables during the cooking process (see figure 2). All the photographed meals were portioned, served on plates and placed on the stovetop or countertop instead of dining tables.

Figure 2. Selected Pictures Used in the Data Analysis

Pictures	Quotes
<p>Adolescent actively engaged in stirring green beans</p> 	<p>"I just follow the instructions and I just let it cook and then I put in the seasoning and stuff and then when it's done we just put it on the plate and see what we have to eat with it."</p>
<p>Different Pasta Meal</p> 	<p>"Its corn on the cob with pasta mixed with tomato sauce and chicken, fried chicken."</p> <p>"I make sometimes meat patty and pasta and macaroni, we cook fish if we have it and fries and cookies."</p>
<p>Breakfast Meal</p> 	<p>"I love pancakes so I decided to make them and with sausage." I used shredded cheese, 2 teaspoons, 1 teaspoon butter, a little bit of salt."</p>
<p>Dinner Meal</p> 	<p>"I think it was a long day, got home I know mom was tired and I know she didn't feel like cooking, I think she offered to take me somewhere I was like no. I'll just fix something at home. I was like sandwich sounds appealing so, make a sandwich and an apple, I like apple."</p>

Selective Coding and Theoretical Integration

Selective coding and theoretical integration is the final step of the theory building process. The purpose of selective coding is to explain the storyline (Strauss & Corbin, 1990) that advanced from establishing categorical relationships. Through this process, several questions were asked about the central phenomena to interpret how food preparation literacy is transmitted within the home and to connect categories. Selective coding entails refining the order of the categories.

The model (Figure 3), provides a visual representation of relationships among the categories. Each rectangle represents a core category and the oval shows the core phenomenon for home food preparation literacy. The double headed arrows illustrate categories that shared relationships bi-directionally. For example, teaching and learning strategies are linked to time, emotion, and family. Together, these depict a hypothesized relationship linking home food preparation to increases in teaching and learning strategies, which in turn are influenced via specific time, and family involvement. Feedback and resources produce emotions that may either promote or discourage home cooked meals. The single headed arrows show the association in one direction. For example, location and resources are connected to time, family and emotion. These two categories have an inverse relationship which increased learning and teaching strategies for home food preparation literacy.

Figure 3. Food Preparation Literacy Model

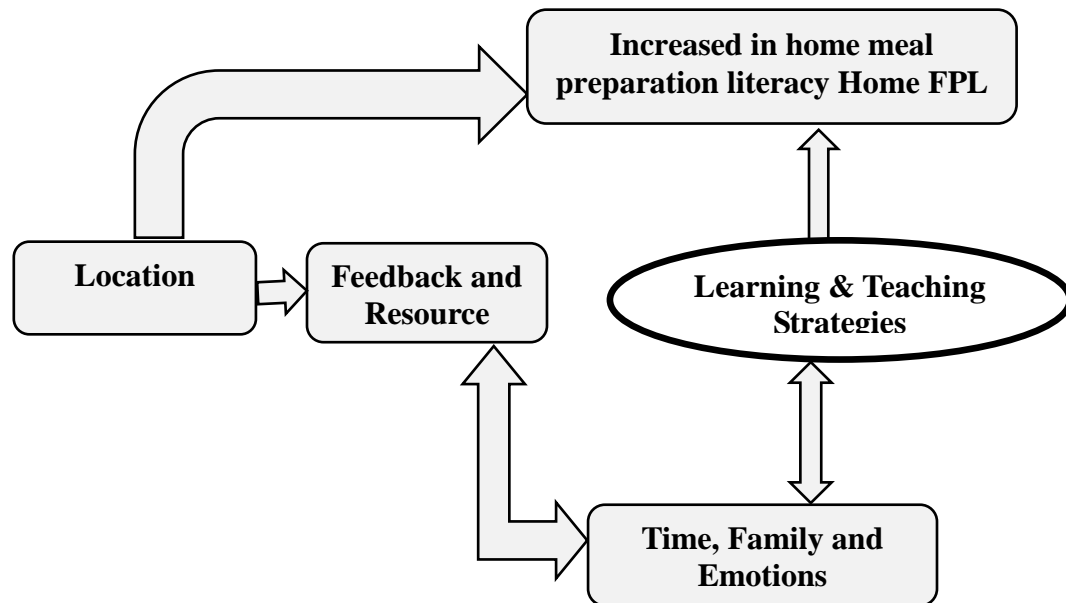


Figure 3. This model represents the relationship between categories that may increase food preparation literacy at home.

The concluding storyline which emerged from the coding and data analysis is that *food preparation is taught at home*. Parents used direct instruction, motivation and observation to engage their children in food preparation. Grandparents of these parents influenced how parents provide food literacy instruction in their homes. Aspects of “time” such as age, determine when food preparation strategies are taught to adolescents. Also, locations (i.e., contexts) such as homes or schools, can influence the type of food preparation literacy being delivered. There are several factors – both positive and negative – that are associated with teaching and learning within the family structure.

Television and computer were discussed as the primary resources for expanding food preparation knowledge.

DISCUSSIONS

This study explored food preparation practices of adolescents and their families, and assessed the foundations of learning and teaching strategies parents used in the home. Analysis of this data provided information on an array of factors influencing food preparation literacy among families. Parental teaching and learning strategies appeared to be the key underlying factors promoting food preparation in the home. Throughout each interview, parents spoke positively about their grandparents' teaching of food preparation skills, and the practical experiences acquired during the learning process.

Although grandparents had no formal training in food preparation, they were skilled and knowledgeable enough to provide instruction to others. Grandparents themselves were trained by their own parents, who themselves had very little, if any, formal food preparation education. In the population studied, it is safe to assume that the knowledge transfer relevant to the practice and preparation of home cooked meals were conveyed via informal teaching techniques. While grandparents and parents should be commended for this effort, the intergenerational informal teaching approach could be associated with the elimination of home cooked meals.

Prior research findings indicate that traditionally, grandmothers stayed at home to care of their families (e.g., grandchildren and children) (Moore, Spain, & Bianchi, 1984). However, studies now show a shift in the role of grandparents in the household

(Dunifon, 2013; Vespa, Lewis, & Kreider, 2013). For example, people are delaying retirement as a result more grandparents are working away from home (Svensson, Lundholm, De Luna & Malmberg, 2015). Therefore, grandparents are less likely to have the time to provide cooking instruction to their children and grandchildren (Geurts, van Tilburg, & Poortman, 2012; Hochschild & Machung, 2012). Considering these factors, it is reasonable to conclude there is a decline in the transfer of food preparation literacy and skills in home environments.

Parents in this study revealed their primary source of food preparation literacy to be their own grandparents, and their strategy to transmit what they have learned to their own children utilizes demonstration and motivation strategies. Parents compared their learning styles with their own adolescent children, and revealed their perceptions of the differences between their own and their children's learning styles resulted in differences in the learners' abilities to execute meal preparation independently. For example, parents learned mainly by observation and asking questions, fueled in large part to their own curiosity, interests and self-motivation. As a result, they were able to prepare meals for their families with little or no assistance or direction. Their children, however, leaned heavily on observational techniques to learn, and asked few questions. Parents believed, consequentially, that the adolescents lack the ability to independently prepare a complete meal.

Adolescents in this study were unwilling or not enthusiastic about preparing meals at home. Some possible explanations for this might be lack of motivation as a result of easily accessible and affordable ready prepared foods (fast and convenience).

Additional factors may include changes in the household structure and individuals' limited knowledge of food preparation (Devine, 2006). Many researchers to date have focused on factors preventing healthy food *consumption* (McWhinney, McKyer, Outley, & McDonald, 2010; Soliah, Walter, & Jones, 2012; Stead et al., 2004), rather than on individuals' knowledge, skills, ability and potential to prepare healthy foods.

An important finding of this study is the clarification of how feedback helps to transfer, promote, and maintain food preparation skills at home. Interestingly, feedback was not viewed as important by parents when they themselves were learning (during their childhood) from their grandparents. This was due to the grandparents perceived as very confident and knowledgeable, and therefore not requiring feedback. For example, one parent was not taught how to measure ingredients, because the grandparents seemed to intuitively know how much of each ingredient to use to for the finished product. This appears to be contrary to current food preparation practices, where recipe use, measurement and feedback are encouraged. Indeed, feedback, which is a contemporary practice among these participants, served to promote more in-home cooking, even among those who cook at home regularly.

Time constraints are well documented in the literature as a barrier to home prepared meals (Candel, 2001; Jabs & Devine, 2006; Smith et al., 2013). However, this study found that for our participants, adolescent age and role transitions (i.e., from non-mother to mother role) facilitated an increase in home prepared meals. All participants indicated they began cooking and preparing meals at the onset of adolescence (i.e., between ages 10 to 1 years). Parents in this study began to include their children in meal

preparation activities at approximately the same ages they themselves were initiated. However, contrary to their own experience of learning while observing, parents in this study attempted to provide opportunities for active engagement (e.g., stirring, mixing, kneading) in the cooking process. Studies show that psychomotor learning increases retention and reduces the likelihood to make mistakes (Adams, 2015). Therefore, unbeknownst to the parents' they utilized an empirically sound strategy.

Parents indicated that motherhood served as a trigger to increase their efforts to prepare more home cooked meals, and consequentially their confidence increased. They attributed the change in effort was their realization of the importance of good nutrition to their child's health. The default behavior prior to having children was to purchase fast and convenient foods. This practice became prohibitively expensive with the arrival of children.

Parents expressed their desire for their children to experience and learn from them, food preparation skills as well as to enjoy preparing home-cooked foods – just as the parents themselves learned from their (grand) parents. These findings were unexpected, and furthermore not well-documented in the literature. Thus it may be worthwhile to further explore.

Emotions have always been linked to eating experiences. Family dining served to promote healthy eating habits, and facilitated more home meal consumption (Fulkerson et al., 2011). The present study found that positive emotions and bonding experiences take place during home meal preparation as well. Adolescents' perceived cooking increased bonding time with parents, relieved stress, and increased their desire to sleep.

The adolescents' perception that cooking provided a means of building family time is important, especially in an era when social media consumes the majority of their waking hours (McGloin & Eslami, 2015). It may be useful for researchers to explore possible links between cooking, interactive family time, and the number of hours spent on social media.

In terms of cooking responsibilities, adolescents discussed assuming a greater share of cooking responsibilities in order to provide parents some relief. This is notable given that parental workload is a contributing factor to fast food consumption (Devine et al., 2006).

Study Strengths and Limitations

This study was conducted to understand adolescents' family food preparation skills and explain the strategies used to engage children in cooking meals at home. The key strength of this study included its qualitative approach using photovoice and grounded theory combined. This design was relevant because combining photovoice and grounded theory methodology facilitated a rich description of food preparation literacy. Another strength of the methodology was that by using photovoice, we were able to capture the unspoken perceptions adolescents were uncomfortable or unable to express.

Like other studies, the present study has a few limitations. First, I limited participation to adolescents and their families who live in a rural county. Therefore, these results cannot be generalized beyond this particular context. Moreover, qualitative inquiry is not intended to produce generalizations as for experimental and quantitatively focused studies. Therefore, the utilization of these participants is not a true limitation.

The participants were mostly African American families with one exception. In the U.S.A., race is often used as a proxy for culture, and food is highly connected to culture and cultural practices. Future studies should focus on participants from different ethnic and cultural groups, in order to improve our understanding of the food preparation experiences in their respective cultural contexts.

CONCLUSIONS

This study contributes to existing knowledge on food preparation literacy by providing a description of family practices in the home. Our findings reveal that for these families, food preparation is not limited to cooking healthy foods. It also include nutrition knowledge, and results in positive eating habits and quality family time. As limited time and lack of resources were found to decrease the preparation of food at home, more work is needed to address strategies to support home cooked meals.

CHAPTER V

SUMMARY AND CONCLUSIONS

The overall purpose of this dissertation was to determine how food preparation literacy is transmitted from parents to children and explore strategies used to sustain home cooked meals. This study explored two specific aims:

1. To summarize published empirical studies that focus on food preparation literacy among children and adolescents and to answer how the present empirical studies conceptualize food preparation literacy for children and adolescents.
2. To seek sought insight into adolescents' experiences in food preparation, assess parents' food preparation skills and discuss parental teaching strategies in the home.

To examine the above aims, a qualitative methodology was employed to assess adolescents' family knowledge about food preparation literacy. A systematic literature review was first conducted to determine the status of the empirical evidence on food preparation among adolescents. The initial database search focused on adolescents as the key participants and was restricted to studies in the United States of America. Due to the limited number of publications retrieved using the delineated search criteria, the search was expanded to include publications in English and children and adolescents in *any* country. Although the search was expanded, it was evident that very little research has been conducted on food preparation literacy among adolescents regardless of the setting (see Chapter II).

The findings from the literature review helped to frame the next segment of the study (i.e., chapter III). Given the limited availability of studies that explored food preparation literacy as a topic, a new study was undertaken. Specifically, photo-voice, grounded theory, field notes and diagraming were used understand adolescent family food preparation literacy learning strategies and experiences. Adolescents highlighted that bonding time with parents, stress reduction served as incentives to engage in home meal preparation activities. Indeed, even the subsequent fatigue from exerting themselves served as an incentive; it provided adolescents an excuse to sleep.

The theoretical perspective presented in this paper illustrates an intergenerational relationship between aspects of food preparation literacy. Based on the experiences of these particular participants, we also identified factors and areas of need, which if met, can facilitate increases in the desire and abilities of families to prepare more meals at home. These needs can also be addressed in the development of policies relevant to food preparation education in schools. In addition, a model was developed that explain factors impacting food preparation knowledge transmission within the homes among family. The final chapter (chapter V) summarized the overall study and provides some recommendation for future studies.

The overall study identified several gaps in the research pertaining to food preparation literacy. This study revealed a dearth of research focused on food preparation literacy. The few empirical studies in existence focus primarily on cooking skills, which is merely a single and small component of food preparation. Also, this

study found that among the limited published papers, some articles were by the same authors. Therefore, there is clearly a gap in the extant literature on this topic.

CONTRIBUTION TO LITERATURE

Each chapter of this dissertation provides a unique contribution to the current body of literature regarding food preparation literacy. This study is the first to combine grounded theory and photo-voice to explore food preparation literacy among adolescents. Chapter II, *Conceptualizing Food Preparation Literacy among Children and Assessing the Methodological Quality of Published Literature: A Systematic Literature Review* was the first of its kind. Prior systematic literature reviews explored adolescents' cooking practices and intervention. This study goes beyond cooking and looked more closely at the literacy of the individuals (parents and adolescents).

The use of photo voice was unique in this study. So far, this approach is not frequently used in the health promotion and nutrition related research. Qualitative researchers utilize themes, but photo-elicitation provides richer data beyond themes alone. Therefore the utilization of photo voice elicited data makes an important methodological contribution to nutrition-related health research.

Chapter IV, provides an in-depth understanding of parent's perception about teaching food preparation in the home. It also explains how food preparation knowledge is transmitted across generations. The findings suggest more intervention is needed in schools as children spend most of their day in formal education setting.

RECOMMENDATIONS FOR FUTURE RESEARCH

There are many policies, and recommendations to help eliminate factors that cause diet-related disease. The effectiveness of these policies and the extent to which the recommendations are implemented - especially among individuals in rural, underserved areas - are still unclear. Many individuals cannot meet the recommendations because of the competitive environment and practical barriers. This study provided some insights and strategies used to promote food preparation literacy in home.

The information that emerged during the study raises several interesting points and further research is needed to help food advocates, dietitian, and health educators address the steadily growing diet-related diseases, especially those that depend heavily on education. In addition, behavioral intervention research is needed to promote food preparation literacy among adolescents. Majority of the literature focused on cooking, which is a small component of the overall food preparation literacy. There is a need for basic meal planning such as measuring ingredients, recipe usage, grocery shopping and grocery list writing, and cleaning of utensils.

This study found that the transition of young adults to motherhood increased home prepared meals. These mothers indicated they are aware of the consequences of poor nutrition. This finding suggests food preparation literacy courses can be taught through prenatal education. During this period, parents can also receive teaching resources and information on programs that help with food preparation.

Although the parents in this study transferred food preparation literacy in the home, this study shows that adolescents failed to identify the basic foundation of the

FPL such as indigents measuring and assembly. To address these gaps, it is important for policy-makers, dietitians, health educators and promoters to understand what is happening in the home, as well as parents' food preparation literacy knowledge. Programs and interventions are needed to help parents and those lacking family (grandparent) support. One way this can be achieved is to establish prenatal training and develop course materials for both fathers and mothers. Whether or not the adolescents are living with one parent, implementing such program will provide an opportunity for children to experience some aspect of home prepared meal training. Prior studies have suggested the need for food preparation skills and training in the home and school. This study shows that foods are been prepared at home, but adolescents ability to identify the different components are lacking (See chapter III).

The research design allows for an in-depth understanding of food preparation as the topic is not fully understood. The recruitment was conducted in a small rural Texas county, therefore generalization is not encouraged. Secondly the adult participants were all mothers, from different socio-economic background. It would be interesting to see a study that explores cultural background with food preparation practice. Another limitation was the utilization of photovoice. Children were excited to take pictures, but were reluctant to express themselves during the interviews. Future studies on using photo voice could utilize texting along with pictures as the primary source of communication.

In summary, food preparation literacy is an important component to change eating habits and ultimately diet-related diseases. This study found that food preparation literacy research is limited. Adolescents have a vague concept of food preparation and parents have no formal training in food preparation. Schools and community programs that emphasize food preparation literacy may find it beneficial to promote good eating habits in order to decrease diet-related diseases.

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APPENDIX A

DIVISION OF RESEARCH
Research Compliance and Biosafety



DATE: March 26, 2015

MEMORANDUM

TO: Ellisa LISAKO Jones-Mckyer, Ph.D., MPH
TAMU - College Of Education - Health And Kinesiology

FROM: Dr. James Fluckey
Chair
Institutional Review Board

SUBJECT: Expedited Approval – Initial Review

Study Number: IRB2015-0006

Title: An Assessment of Food Preparation Literacy in Adolescents' Family Home

Approval Date: 03/26/2015

Continuing Review Due: 02/15/2016

Expiration Date: 03/15/2016

Documents Reviewed and Approved:

Title	Version Number	Version Date	Outcome
Potential Participants letter final revision	Version 1.1	12/29/2014	Approved
flyer final revision	Version 1.1	12/29/2014	Approved
Telephone script final	Version 1.0	03/14/2015	Approved
Flyer	Version 2.0	02/20/2015	Approved
Food Preparation Literacy Assessment	Version 1.0	12/29/2014	Approved
Demographics	Version 1.0	12/29/2014	Approved
Screen form final	Version 1.0	12/29/2014	Approved
Assent Form	Version 2.1	02/20/2015	Approved
Consent	Version 2.1	02/20/2015	Approved

Document of Consent: Written consent in accordance with 45 CF 46.116/ 21 CFR 50.27

- This research project has been approved. As principal investigator, you assume the following responsibilities:
1. **Continuing Review:** The protocol must be renewed by the expiration date in order to continue with the research project. A Continuing Review application along with required documents must be submitted by the continuing review deadline. Failure to do so may result in processing delays, study termination, and/or loss of funding.
 2. **Completion Report:** Upon completion of the research project (including data analysis and final written papers), a Completion Report must be submitted to the IRB.

750 Agronomy Road, Suite 2701
1186 TAMU
College Station, TX 77843-1186
Tel. 979.458.1467 Fax. 979.862.3176
<http://rcb.tamu.edu>

3. **Unanticipated Problems and Adverse Events:** Unanticipated problems and adverse events must be reported to the IRB immediately.
4. **Reports of Potential Non-compliance:** Potential non-compliance, including deviations from protocol and violations, must be reported to the IRB office immediately.
5. **Amendments:** Changes to the protocol must be requested by submitting an Amendment to the IRB for review. The Amendment must be approved by the IRB before being implemented.
6. **Consent Forms:** When using a consent form or information sheet, you must use the IRB stamped approved version. Please log into IRIS to download your stamped approved version of the consenting instruments. If you are unable to locate the stamped version in IRIS, please contact the office.
7. **Audit:** Your protocol may be subject to audit by the Human Subjects Post Approval Monitor. During the life of the study please review and document study progress using the PI self-assessment found on the RCB website as a method of preparation for the potential audit. Investigators are responsible for maintaining complete and accurate study records and making them available for inspection. Investigators are encouraged to request a pre-initiation site visit with the Post Approval Monitor. These visits are designed to help ensure that all necessary documents are approved and in order prior to initiating the study and to help investigators maintain compliance.
8. **Recruitment:** All approved recruitment materials will be stamped electronically by the HSPP staff and available for download from IRIS. These IRB-stamped approved documents from IRIS must be used for recruitment. For materials that are distributed to potential participants electronically and for which you can only feasibly use the approved text rather than the stamped document, the study's IRB Protocol number, approval date, and expiration dates must be included in the following format: TAMU IRB#20XX-XXXX Approved: XX/XX/XXXX Expiration Date: XX/XX/XXXX.
1. **FERPA and PPRA:** Investigators conducting research with students must have appropriate approvals from the FERPA administrator at the institution where the research will be conducted in accordance with the Family Education Rights and Privacy Act (FERPA). The Protection of Pupil Rights Amendment (PPRA) protects the rights of parents in students ensuring that written parental consent is required for participation in surveys, analysis, or evaluation that ask questions falling into categories of protected information.
2. **Food:** Any use of food in the conduct of human subjects research must follow Texas A&M University Standard Administrative Procedure 24.01.01.M4.02.
3. **Payments:** Any use of payments to human subjects must follow Texas A&M University Standard Administrative Procedure 21.01.99.M0.03.

This electronic document provides notification of the review results by the Institutional Review Board.

APPENDIX B

Food Preparation Literacy Assessment

1. What are the kinds of foods prepared at home?
2. Tell me about your cooking skills.
3. Tell me how you learned to cook your meals.
4. What are some of the barriers you face while cooking with children?
5. Think back at your youthful days of cooking, what was the most interesting thing you did you did that you liked about cooking.
6. What are some of the things you can see that's affecting youths cooking skills today?
7. If cooking should be taught in school, what would you suggest for children?
8. Tell me about your food preparation skills before having children?
9. Can you think of any program in your community that helps with cooking or food preparation skills?

APPENDIX C

RECRUITMENT FLYER

**Do you prepare meals at home and have a child
between the age of 13 and 19?**

We would like to hear from you !

We are conducting a study to understand rural adolescents' family food preparation knowledge and experiences at home.

**If eligible, participants will
be asked to:**

Take pictures of food preparation interaction at home and participate in a 60 minutes interview



To thank you!

Each participants name will be entered in a drawing to win a digital camera

If you are interested or have any question, please contact:

Andrea McDonald at 713-816-8750 or Email:amcdonald1@hlkn.tamu.edu

This research is conducted under the direction of Dr. Lisako McKyer at Texas A&M University Kinesiology, and has been reviewed and approved by the Texas A&M University Institutional Review Board.



Department of Health and
Behavioral Sciences
IRB APPROVAL DATE: 03/26/2015
REVIEWED DATE: 03/15/2016

APPENDIX D

PARENTS DEMOGRAPHIC INFORMATION

FOOD PREPARATION LITERACY ASSESSMENT

PARENTS DEMOGRAPHIC INFORMATION

Please complete the survey, if you cook at home and live with an adolescent (**Circle your choices**).

If we need to contact you, what is your

1. Name: _____
2. Telephone # _____
3. What is YOUR gender? Male Female
4. What is the highest level of education YOU have completed?
A. 1st - 8th grade B. 9th - 12th grade C. GED D. Some College
E. Associate's degree or Technical College degree F. High school graduate Bachelor's Degree or higher
5. What is YOUR household income?
A. \$0-\$10,000 B. \$10,001 - \$20,000
C. \$20,001 - \$30,000 D. \$40,001 - \$50,000 E. \$50,001 and above
6. What is your marital status?
A. Never married (single) B. Separated C. Widowed D. Married E. Divorced
7. What is YOUR race? (Choose all that apply – you can choose more than one)
A. White
B. Asian
C. Native American
D. Black
E. Pacific Islander
F. Hispanic/Latino
G. Other (Please Specify): _____
8. How many members in your household _____

CHILDREN INFO

9. What is your child age? _____
10. What is your child gender? Male Female
11. Does your child live you? Fulltime Part time
12. What is your relationship to the child
Mother Father Stepmother Stepfather Grandmother Grandfather
Other _____



IRB NUMBER: IRB2015-0006
IRB APPROVAL DATE: 03/26/2015
IRB EXPIRATION DATE: 03/15/2016

APPENDIX E

TELEPHONE SCRIPT

Hello

My name is Andrea McDonald. I am a doctoral student in the Department of Health and Kinesiology at Texas A&M University and working under the supervision of Dr. Lisako McKyer. I am calling to inform to you about a study being conducted on food preparation in the home of adolescents. You may be eligible to participate if you:

- (1) Are a resident in a rural county in Texas
- (2) Have at least one child between the age of 13-19 years
- (2) Cook at home at least once a week
- (3) Be at least 20 years of age or older
- (4) Speak English

If you are eligible and decide to participate in this study, you will be asked to follow a two-step process.

Step 1: We will provide you with a digital camera for two weeks and ask you to take pictures of what you or your family think is food preparation in your home. This could be any food or meal and you can take as many pictures that you would like. At the end 2 weeks, we will collect the camera with the SD cards.

Step 2: We will interview you and your adolescent(s) child to help us understand what was going on in the pictures you took. The interview will be done on a day, time and place that work for you. During the interview, we will voice record our discussion for accuracy.

If you participate in the study, you will not be paid and it will not cost you anything except for your time. As a thank you, we will enter your name in a drawing for a digital camera that cost approximately \$50.00.

Your participation will be completely voluntary. If you would like to participate, I can go ahead and schedule a day and time for us to meet and discuss more about the research. Also, during that time, I will provide more written information. If you need more time to think about this study, please feel free to do so. However, please do not hesitate to contact me with any additional questions or your decision about participation. My contact phone number is 713-816-8750 or you may email me amcdonald1@hkn.tamu.edu.

Thank you so much for your time.

Have a great day.



IRB NUMBER: IRB2015-0006
IRB APPROVAL DATE: 03/26/2015
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APPENDIX F

LETTER TO PARTICIPANTS

Dear Potential Participants,

My name is Andrea McDonald. I am a doctoral student at Texas A&M University in the Department of Health and Kinesiology. I am writing to let you know about a ***food preparation literacy*** study being conducted that may interest you. It is possible that you may be eligible to participate. In order to be eligible, you should

- 1) Have child at home between the age of 13 and 19 years old.
- 2) Prepare meals at home at least 1 time per week.
- 3) Live in a rural county and speak English

Please be aware that, if you are eligible, your participation in this study is completely voluntary. There will be no consequences to you if you choose not to participate. However, if you do choose to participate, the study will involve taking pictures of you or your children preparing meals at home and participating in a 45-60 minutes semi-structured interview. Each participants' name will be entered in a draw to win a digital camera.

If you would like to participate, or have any questions about the study, please email at amcdonald4@hlkn.tamu.edu or contact me at 713-816-8750.

Sincerely,

Andrea McDonald, MS



IRB NUMBER: IRB2015-0006
IRB APPROVAL DATE: 03/26/2015
IRB EXPIRATION DATE: 03/15/2016

APPENDIX G

SCREENING FORM

TEXAS A&M UNIVERSITY

PARTICIPANT SCREENING FORM FOR FOOD PREPARATION LITERACY STUDY

We are currently conducting a voluntary research project on food preparation literacy with adolescent's family. If you are interested to share your views, can you please answer the following questions?

1. Do you cook at home at least 1 time per week?
 - A. Yes
 - B. No
2. Do you have a child at home between the age of 13 and 19 years old?
 - A. Yes
 - B. No
3. How would you associate yourself with the child? What is your relationship to the child?
 - A. Parent
 - B. Legal Guardian
 - C. None of the above
4. Are you over the age of 20 years old?
 - A. Yes
 - B. No
5. Are you a resident of Waller County?
 - A. Yes
 - B. No
7. Would you be willing to take pictures of you and your child/ren preparing meals at home?
 - A. Yes
 - B. No
9. Would you be willing to participate in an interview for about 45 minutes with you and your child/ren about meal preparation?
 - A. Yes
 - B. No



IRB NUMBER: IRB2015-0006
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